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Some Observations on the Feeding and Management of a Dairy Herd*

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SOUTHAMPTON

It has always been my contention that the province of the veterinary surgeon does not begin and end with the treatment of the individual animal, but includes the proffering of advice to his clients—often unsought—which will help to maintain the health and efficiency of the herd.

I have followed this principle for a number of years and have in consequence found my work increasingly interesting. More than usual interest is immediately aroused in those particular herds in which advice is accepted and acted upon, particularly when it proves successful and economic. Efficiency in the dairy herd is in my experience dependent upon the maintenance of a high degree of good health, and the promotion of economic milk yields. Inevitably associated with the former is eradication of tuberculosis and eradication or control of contagious abortion, Johne's disease and mastitis. Promotion of economic milk yields is dependent upon the strict recording of yields and the proper rationing of the dairy herd.

In order to ration correctly, the daily milk yield of the individual cow must be known and therefore daily recording is one of the first steps in the economic management of the dairy herd. There are frequently a large number of cows which reach a high yield for a short time, and then fall off to an uneconomic yield with possibly a very long dry period. If recording were universally carried out, it would be found that a fair proportion of the cows kept in dairy herds to-day are kept at a loss.

Food is utilised for two purposes, *viz.*, maintenance and production. The maintenance ration is that required to maintain the whole of the functions of the body in the *status quo* without allowing for increase in growth and weight or for the production of milk. The production ration is that excess of food supplied over the maintenance ration which is utilised for growth, both for the cow and foetus, improvement in condition and production of milk.

The nutritive value of the food is most easily calculated in terms of starch equivalent. The latter is determined by taking account of the digestible protein, fat, carbohydrate and fibre present in foods, adding their value together in terms of fat and giving the result in terms of starch. When one states that the starch equivalent of flaked maize is 83, it means that 100 lb. of that food is equivalent to 83 lb. of starch for fat production. Foods with a large amount of fibre are more suitable for maintenance because of the heat developed in chewing and digestion; concentrated foods with a low percentage of fibre are more easily and completely digested and are more suitable for production. It is essential that the foods should contain an adequate amount of protein and in the course of computing a ration this is ensured by arranging for an adequate amount of protein equivalent. Protein equivalent is the sum of the digestible true protein *plus* half the difference between it and the digestible crude protein which includes the amides. It has been computed that for the maintenance of a dairy cow of 9 cwt. in weight, 6 lb. starch equivalent, including 0·6 lb. of protein equivalent, is required daily. For production, 2·5 starch equivalent, including 0·6 protein equivalent, per 10 lb. of milk containing 3·7 per cent. fat is required. No laborious calculations are necessary in computing a ration and there is no strict need to memorise all these details in that the starch and protein equivalent of all the commonly used foods have been calculated and tabulated and by using the tables provided it is possible, without any great trouble, to compute rations.

Once the yield has been calculated, the cows are fed on their maintenance ration *plus* their production ration. It has been my practice to give a daily allowance of 18 to 20 lb. per head of good hay for a full maintenance ration. Part of the allowance can be replaced by roots, kale, cabbage and silage when available. The simplest way of replacing hay in the maintenance ration by roots, kale or cabbage is to calculate that the equivalent of 1 lb. hay is 4 lb. roots or 2½ lb. kale, cabbage or silage. The amount of roots fed should not be excessive: 30 to 40 lb. should be the maximum. Hay should preferably be fed after milking, roots or kale always after

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milking, and if taint is feared they should be fed out.

The cost per head for maintenance renders the first gallon of milk the most expensive. Production of a gallon of milk costs approximately one-quarter the cost of maintenance. It is obvious therefore that the more milk a cow produces the cheaper it becomes proportionately per gallon. In the spring, summer and early autumn when grass land is available, maintenance ration is not required: grass land of average quality is capable of providing the ordinary cow with sufficient to maintain it and to produce two to three gallons of milk. It is advisable to feed for production above that amount. As grass becomes less plentiful and more fibrous, it becomes less productive and finally capable of only supplying sufficient for maintenance. The condition of the pastures and weather conditions are contributory factors, and it is here that practical experience is required to estimate the value of the pasturage available. During the dry summer catch crops, such as lucerne, vetches, sainfoin and maize can be fed to replace shortage of pasture.

In calculating the production ration, it is essential to make the bulk of the ration an amount easily measured and fed and to ensure that it contains the necessary starch and protein equivalent. The usual amount of feed varies between 3 to 4 lb. per gallon of milk. The amount commonly fed is 3½ lb. and it is essential that this 3½ lb. contains 70 per cent. starch equivalent (approximately) and 17 per cent. protein equivalent to provide for the production of one gallon of milk (2·5 starch equivalent, 0·6 protein equivalent). A mixture of foodstuffs is advisable in that a variety of proteins appears to give the best results. With adequate and proper feeding, a cow will give a high yield of milk and yet maintain bodily condition and good health, but allowance should be made for the mineral requirements by providing additional mineral other than that provided in the ration. The mineral requirements for milch cattle have been calculated as follows: for maintenance, 1½ oz. lime and ⅘ oz. phosphoric acid daily; for production, ½ to ¾ oz. lime and ⅔ to 1 oz. of phosphoric acid to the gallon daily. Each gallon of milk contains ¼ oz. lime to ⅓ oz. phosphoric acid, so that the above estimates 50 to 33 per cent. actual assimilation. The amount assimilated is variable and not known with certainty. Cows giving economic yields give out more mineral matter, particularly calcium and phosphorus, than they can assimilate from their foods. They have an extraordinary power of storing minerals beyond their immediate needs in the bone tissues. These reserves are drawn on when supplies in the food are insufficient, but they are limited. Deficiency of minerals in the ration, when slight, will lead to malnutrition, and if great will lead to deficiency disease: breeding capacity, milk yield, and susceptibility to disease are all likely to be affected.

Cereals and concentrates contain very little mineral. Pasture grasses and hay contain a much higher percentage of minerals and are the chief source for the milch cow. Linton reports the analysis of 41 samples of hay, which showed a range from 0·32 to 2·30 per cent. calcium oxide, with the mean value of 0·99 per cent. Phosphoric acid content varies from 0·29 to 0·75 per cent., with a mean value of 0·46 per cent.; pasturage contains approximately 0·25 per cent. It is obvious, therefore, that a heavy milking cow cannot digest and assimilate the essential minerals for her requirements on ordinary pasturage. There is, therefore, a heavy draw on the natural reserves, since the normal balance of mineral is maintained in the milk in spite of the fact that deficiencies may exist in the ration. Feeding for yield therefore entails strict attention to the provision of additional mineral. This can be carried out in two ways. The first is by ensuring that the highest amount possible is present in the pasturage and hay, by having periodic analyses of the soil made and deficiencies made up by the use of suitable fertilisers when discovered: washed chalk, lime, basic slag, superphosphate and North African phosphate are all valuable for this purpose. The next method is to provide the mineral in the ration. This is carried out by feeding sterilised bone flour in quantities of 2 to 8 oz., depending upon the milk yield. It is best fed in the dry food. It is the cheapest mineral addition to foodstuffs and in my experience is the only one about which I have any definite proof that assimilation to any extent does occur. Most mineral salts contain some percentage of this product nowadays. In my experience the addition of minerals to the ration, without any other change in the food whatsoever, will cause improvement in condition and in milk yields which will be maintained. When the feeding of minerals has ceased milk yields have fallen. Opportunity for building up the natural reserves occurs during the dry period. Green foods and young grasses are extremely valuable in this connection not only on account of the minerals contained, but because of the vitamin D content. In the normal course of events, iodine is not likely to be deficient; the amount present in the milk is variable, depending upon that available. In regard to vitamins, deficiency is not likely to occur under normal farm conditions, except perhaps in young stock kept in buildings or in high-yielding cows kept indoors and given little or no green food.

The bulk of the ration should not exceed 35 lb. dry matter daily, and for the average cow any

amount above that tends to lower efficiency by causing faulty digestion and lowered productivity in consequence. It is usual in high-yielding cows to give the production ration in full and then add to that sufficient maintenance ration to make up to the maximum of dry matter allowed to satisfy the appetite but not to impede the digestion.

It is customary to commence the production ration four to five days after calving in a cow which has calved and cleansed normally. The maximum yield is usually reached in six to ten weeks and up to that period production ration is fed slightly in excess of that required in order to reach the maximum output possible. It is then gradually reduced with the normal fall in milk production. When yield is reduced to 1½ gallons daily, feeding becomes uneconomical in cows in good breeding condition. The concentrated ration is best fed immediately prior to milking.

Dry cows and heifers are given a ration of 3 lb. of good cake—in my experience, palm kernel cake gives the best results—six weeks before calving, increasing the amount fed each week by ½ to 1 lb. daily. This system is not associated with any high incidence of milk fever provided minerals are fed.

Fresh young grass has a high food value. The weight of pasture grass eaten by the dairy cow is about 100 lb. daily, containing starch equivalent sufficient to produce 5 gallons of milk, and protein equivalent sufficient to produce 7 gallons if of first class quality. This is consequently not strictly balanced. Those cows producing over 4 gallons, therefore, require a little starch supplement to obtain the best results. Flaked maize or maize gluten is very useful for this purpose. I understand that so-called "grass nuts" consist of foodstuffs with a high starch equivalent.

In the springtime, when the cows first go out to grass, it is not uncommon to hear complaints of the extreme laxativeness of the animals induced by the grass. This can be checked in two ways: (1) by feeding a small quantity of good hay immediately prior to the animal going out to grass. The objection to this is the cost, and the difficulty in getting cows to eat hay unless it is very good at that time of the year; (2) by rationing the grassland where possible. It will be found that cows will go out on to good grass and will eat for one to one-and-a-half hours. They will then lie down and chew the cud satisfied. If removed to a barer pasture at that time there is considerable saving of pasturage and the laxativeness will not be so noticeable, being associated with over feeding. The feeding of a little flaked maize, maize gluten or grass nuts to balance up the starch and protein equivalents also tends to act as a corrective.

As I have pointed out, efficient management of a dairy herd becomes associated with improved methods of milk production. This usually commences with the suggestion that the "accredited" standard should be reached. Actually, once the system has been established it involves very little extra labour and the results are quickly obvious. I have had very considerable experience of this, and although on a good many farms when first started the employees grumble, once the system had been established they began to appreciate the good points and found that it was not so arduous as they had feared, and few, if any, would go back to their old methods. Clipping the udders, flanks and tails in an effort to make the maintenance of cleanliness easier has often been objected to, but is not associated with any bad effects or any greater incidence of mastitis. A good and hygienic method of washing the udders and flanks is to use slowly running water from a hose-pipe or can and cloth. This saves the use of the same bucket of water for a number of cows.

The next step in progress is eradication of tuberculosis which, if it is to be economic, is usually a gradual process often involving considerable ingenuity in arranging segregation according to the buildings and pastures available. Gradual elimination of reactors at their most marketable time will in most herds entail a period of at least twelve months. During that period frequent short-term re-tests are necessary in order to keep a check on the spread of infection. My most rapid and greatest successes in eradicating tuberculosis have been in those herds in which it has been possible to organise the pasture land. By that I mean that there has been immediate or fairly rapid elimination of reactors. Non-reactors have been immediately placed upon land which has not been grazed for a considerable period, such as a hay field from which hay has been cut, and for as long as possible, are kept off all pasture land that has been grazed. By starting such a scheme towards the end of the summer, after hay has been cut, it is possible to avoid utilising pastures which have been grazed by infected cattle, until the end of the following April. The value of winter pasturage to the dairy herd is very small and little or no loss is occasioned if it is not utilised. In those cases in which it has not been possible to organise the pasture land, I have found that reactors have occasionally cropped up even in self-contained herds in which repeated re-tests have been made. The danger of reinfection from the pasture is, in my opinion, an important point.

In the case of contagious abortion, the best method naturally would be eradication, if possible, with short-term blood tests and organisation of the pasturage, leaving vacant for three months pastures that have been grazed by

infected cattle and giving them suitable attention, such as repeated chain harrowing and fertilising. The method is laborious and somewhat expensive as it involves either immediate segregation of reactors or their disposal when not most economically marketable. The greatest drawback to the system is the unreliability of the test. It is well known that some animals fail to react and yet subsequently abort, their capacity for reaction frequently not being reached until 14 days after the act of abortion.

At the same time, it is well known that some animals react and have never aborted or been subjected to preventive inoculation and yet carry their calves to full time and remain a possible latent source of infection in the herd, the organisms being voided in the discharges and in the milk. Alternative methods of control are preventative inoculation of heifers with live vaccine, which in my experience sometimes gives excellent results and at others unsatisfactory ones. In some cases it is associated with a considerable degree of sterility after calving which requires treatment subsequently. As an alternative to this, one suggests isolation of cows approaching calving, isolation of animals showing the slightest suspicion of abortion, with adequate disinfection subsequent to the act; suspension from service of aborting animals for eight to ten weeks and segregation during that period; care in the handling and control of the milk of aborting animals, particularly in the first 10 to 14 days after the act; not allowing heifers to graze after the milking herd and so pick up the infection from the pasturage, and not weaning calves on aborting animals to allow dissemination of infection through the faeces. Manure should be stacked in heaps for at least three months before utilising it on pasture land.

I have obtained reasonable results with all three of these methods, but there is no doubt in my mind that eradication and control of abortion at the moment presents the greatest problem to the veterinary profession. The essential required is a more reliable diagnostic than the agglutination test.

In regard to Johne's disease, claims have been made that heavy mineral feeding is specific for this condition and that where it is adopted cases do not occur or where cases have occurred they can be cured by the administration of heavy mineral supplement. In my experience of mineral feeding, which extends over a period of twelve years, I cannot agree with this claim. Cases do occur in herds which are regularly fed with minerals. Naturally one would not expect them to be so numerous in view of the fact that in herds in which trouble is taken to ration the food properly the animals are kept in a higher degree of good health and thus have a higher resistance to infection. While I cannot support the above claim, I do agree that the feeding of mineral does increase the resistance to infection when present in both this disease and others.

In regard to the eradication of Johne's disease in a herd, I have carried this out by the use of tested johnin in a very heavily infected herd. This, as in the case of tuberculosis, entails repeated short-term testing; immediate isolation and disposal of reactors; thorough disinfection; organisation of the pasture land; draining and repeated chain harrowing and adequate fertilising, together with the improvement in feeding and supply of mineral addition.

In commercial herds the only method of control is the earliest possible detection of the disease either by the use of johnin on any suspected case (by this I mean not only the cows that are scouring, but also any animal which is unthrifty from some unknown cause), or, failing that, by microscopical examination of the faeces of suspected cows. This I have found reasonably reliable and to entail considerably less expense to the farmer than testing.

Streptococcic mastitis presents the next greatest problem to abortion in the dairy herd. It can and does exert very serious economic effects, resulting in considerable reduction in milk yields and depreciation in value of the cows due to the loss of, or partial loss of, one or more quarters. In those cases which recover, lessened yields in the future are frequently noticed, due to atrophy of the mammary tissue. The use of brom. cresol purple papers for the detection of those cases in which the quarter is infected, although no obvious changes are present in the milk, is of great value. The efficiency of this method is very high and in one very large herd, with which I am connected, it has been compared carefully with the results of cultural examination of individual milk samples from the four quarters of cows and has been stated to be 95 per cent. efficient. It has the merit of being extremely cheap and easy to read.

On meeting a case of mastitis in a herd, it is my custom to test with brom. cresol purple to ensure as far as possible that the condition is streptococcic and to treat that individual quarter until recovered. Subsequently the other quarters are tested and if they show evidence of infection they are treated to clear them. The agent I use is "Entozon," 1:1,250, injecting into the udder at approximately blood heat. In herds which have been heavily infected, I have been able by this means to control streptococcic mastitis. Where repeated cases occur in a herd it is advisable to test individual quarters at regular intervals and to ensure that those animals which show evidence of infection are milked last, being placed preferably at one end of the cowshed. Every care must be taken to avoid dissemination of infection by the milkers' hands by strict attention to cleanliness and the milking of the fore milk into a

proper vehicle and not on to the ground. Subsequently systematic examination and treatment of those quarters showing reaction to brom. cresol purple with "Entozon" will gradually eradicate the condition. In most cases a single injection suffices to effect a cure in a clinical case, but in some it is necessary to repeat the injection a second or a third time at intervals of five to seven days.

In treating streptococcic mastitis, I do not advise an injection of "Entozon" in those cases which occur immediately after calving in which there is very considerable oedema of the udder. I prefer to treat the udder before injecting "Entozon," until the oedema has become considerably reduced, by adoption of the ordinary measures of massage and hot and cold water fomentations, etc. The use of "Entozon" in such cases is occasionally associated with considerable increase of the oedema and suppression of the milk yield, which is not desirable.

Another point in the control of streptococcic mastitis is that in herds which have been very badly infected I have found it an extremely good policy during the first year of eradication not to allow any animals which had been clinical cases to have a dry period, milking them right through until the subsequent calving. This practice has resulted in the elimination of acute cases occurring at parturition and helps considerably in clearing up infection. In my experience it has had no detrimental effect upon the cow or the milk yield, although sometimes in a heavy yielding cow 4 gallons of milk daily had been milked out prior to the animal calving. The only drawback is the increased tendency to milk fever, which can easily be controlled by warning the farmer of this possibility and giving calcium intravenously directly symptoms are manifest.

In conclusion, I must point out that this paper is in no way intended to be a comprehensive survey of feeding and management in the dairy herd, but embodies some of the principles which I have put into use, and which I have found of value.

UNIVERSITY OF LONDON EXAMINERS IN VETERINARY SCIENCE

At a recent meeting of the Senate of the University of London, the Boards of Examiners for the Second Part II and Final Examinations in Veterinary Science for Internal and External Students in 1938 were constituted as follows:—

Veterinary Anatomy.—Dr. E. C. Amoroso, Dr. J. McCunn (Chairman) (R. Vet. Coll.); and the External Staff Examiner.

Veterinary Physiology.—Dr. J. Y. Bogue, Professor W. L. Symes (Chairman) (R. Vet. Coll.); and the External Staff Examiner.

Veterinary Hygiene.—Professor W. C. Miller, Professor G. H. Wooldridge (Chairman) (R. Vet. Coll.); and the External Staff Examiner.

Veterinary Pathology.—Dr. F. C. Minett (Chairman) (R. Vet. Coll.); and the External Staff Examiner.

The Veterinary Record

December 25th, 1937.

Disillusion

THE recent Agriculture Act contains the seeds of a veterinary service whose eventual growth cannot as yet be clearly envisaged. The premier stock-breeding country of the world is at last preparing for a concerted effort to combat disease among its animals and enhance the value of a great national asset. The importance of the project to us and to agriculture is paralleled by that of the National Health Insurance Acts to the medical profession and to the wage-earning classes. We cannot contemplate with equanimity anything less than a truly auspicious beginning having the good wishes of everyone concerned.

To plan and guide the launching of such an endeavour requires rare attributes. Vision, creative power, understanding, an attitude of friendly co-operation, a willingness to give and to accept help and to discuss and even adopt constructive suggestions put forward by others are among the essentials to success. Unfortunately, the counsel of the profession has not truly been sought, its consultative committee has been presented with defined schemes in which it has been expected to acquiesce almost at once. A policy of secrecy, a spirit suggestive of dictatorship and an apparent asssumption of omniscience have prevailed. Secrecy has created fear and rumour, no display of outstanding competence has justified dictatorial methods, and the claim to omniscience has not been sanctioned by events. The goodwill of the profession has been shocked and dissipated, for on no material point have its wishes been met. Its county men are to be absorbed by the State smarting under petty injustices, the municipal officer is to be left in large measure to work a broken system of duties concerning public health, while the practitioner is expected to welcome temporary inclusion within the service. Such intentions are widely different from those which the

profession had been led to expect and have not unnaturally annihilated its confidence.

Under these circumstances postponement of the appointed day would seem inevitable until such time as it is assured that the profession, which has to work the scheme, is truly organised on national lines and not in a way which takes one section into bondage and offers another an existence denuded of its vital interests in agriculture.

This scheme, as disclosed up to the present, is a travesty of all that is meant by a co-ordinated attack upon the diseases of livestock and has little, if any, hope of success.

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Animal Nutrition and the Practitioner

THE majority of our profession practising in this country would probably agree that they devote the greater proportion of their time to curing disease and that only rarely are they called in by their clients to advise upon the best procedure to be adopted in order to get the stock into the optimum condition. It cannot be doubted that this side of applied veterinary science is becoming more and more important and that any such tendency should receive the greatest encouragement and help from the profession itself. Whilst many hold the view that owners will not pay for advice on how to avoid disease, others are of the opinion that once the farmer learns to value such advice the veterinarian will be gladly called in for this purpose. A few veterinarians already make it a practice to tender such advice and they are able to report, as does Mr. Gould in the paper published in this issue, that the farmer readily learns to appreciate this advice provided it is based upon sure knowledge.

In tendering advice on feeding, the veterinarian must possess considerable knowledge of a comprehensive field of physiology, biochemistry, foods and nutrition. He must be acquainted with a variety of crops, their actual condition and their cost, and their composition and suitability for the purpose intended. In addition to an understanding of the general principles of nutrition, he must know about a host of other problems such as the extent of the digestibility of fibre arising from bacterial action in the different animals, the changing digestibility of plants as they age, the bulk effect of different feeds arising either from their ability to absorb moisture and swell or from other causes, the character of the fatty constituents of foods and their effects on carcases and milk, the different proteins and a knowledge of the varying biological value of the constituent amino-acids and the advisability or otherwise of feeding vitamins or complex mineral mixtures in addition to the normal ration.

Most of these problems are now taught in the veterinary schools, but such knowledge is continuously extending and publications such as the *Veterinary Bulletin* or the *Nutrition Abstracts and Reviews* may be usefully consulted on these problems. Readable and readily accessible text books can be a great help to the busy practitioner, and in this connection we would draw the attention of our readers to the book by Professor Maynard, reviewed in another column.

We are confident that the usefulness of the veterinary practitioner to the State and to the stockowner will increase greatly along the lines mentioned above in the very near future. The great value to the community which the profession can render along prophylactic lines has already been illustrated by the work of the veterinary services in the Colonial Empire. There is no reason why it should not be demonstrated equally well in Great Britain.

REVIEW

[**"Animal Nutrition."** By L. A. Maynard (Professor of Animal Nutrition, Cornell University). Published by the McGraw Hill Publishing Co., Ltd., London. (1937.) Price 24s.]

The veterinarian in his daily work is gradually being asked more and more frequently to give advice to the stockowner upon the feeding of and methods of producing the optimum health in animals. The groundwork upon which the average veterinarian has had to build in the past has been meagre, although of late years more satisfactory courses in this branch of our knowledge have been given at the veterinary colleges. Few satisfactory books have yet been published covering in concise form the general biochemical and physiological knowledge upon which the more applied nutritional knowledge must be based. The book under review eminently

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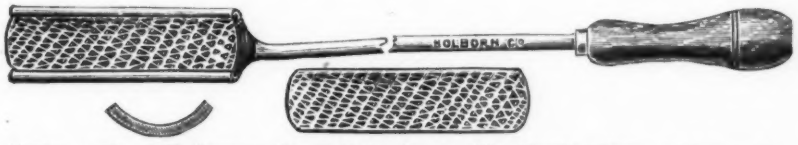

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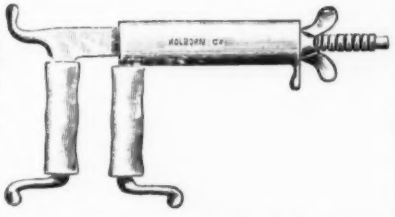

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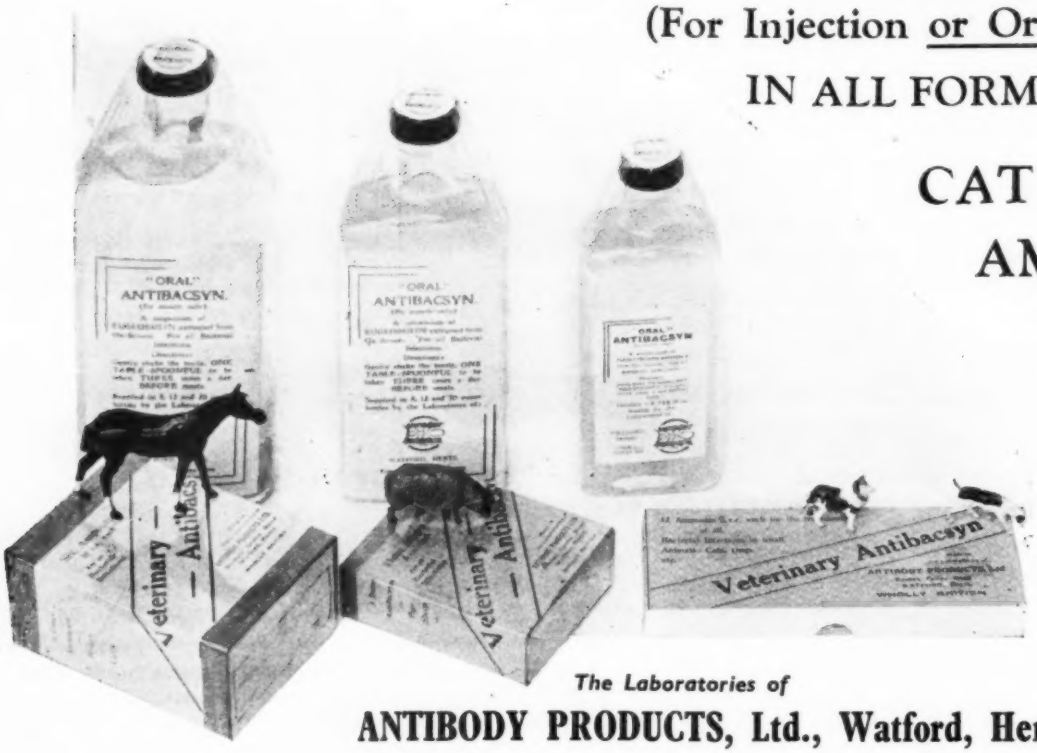

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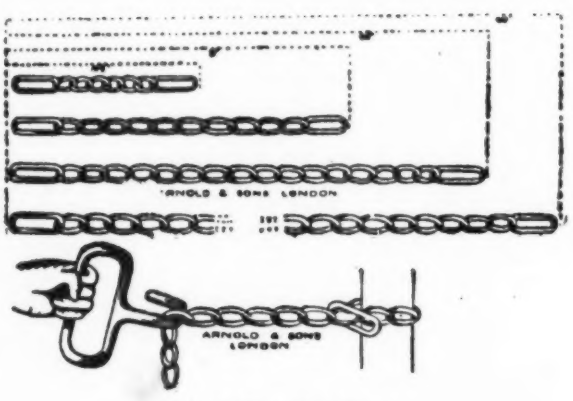

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satisfies this criterion. The present knowledge is not only given in readable, although brief, form, but the author has managed to deal with the work described in a critical manner and make it clear to the reader what knowledge is thoroughly reliable and what is still a matter for speculation or future work. In addition, at the end of each chapter, a number of useful references to the latest reviews and original papers are given to enable any reader to pursue a particular branch of study further. Short biographical footnotes relating to workers referred to in the text add interest to the context.

The text is devoted firstly to the principles of nutrition and subsequently to their applications in feeding practice. A useful introductory chapter is followed by one on the animal body and its food and another, excellently written, on some physical bases of life processes. Then the various food constituents, the proteins, lipoids, carbohydrates and inorganic elements are clearly dealt with and their metabolism described, frequent references throughout being made to the different species of animal. Such matters as vitamins, feeding experiments, nutritional balances, and maintenance requirements are discussed, followed by valuable chapters dealing with the applied problems of growth, reproduction, lactation and work production.

The author himself states in his Preface that a consideration of feeding practices lies outside the scope of the book. There may be some who will feel a little disappointed at not finding help and guidance in the practical construction of rations for the various species of farm animals. It should be clearly realised, however, that although fundamental principles of nutrition are, of course, common to all countries, necessary modifications must be made to suit local conditions. In the U.S.A., the system of using standards of starch and protein equivalents (now almost exclusively employed in Britain) is not common. It was, therefore, not to be expected in a book of this kind that there would be more than brief reference to these. We do not feel, however, that this should be regarded as a criticism of the book, but rather as an explanation. There is so much valuable information presented, that it will form an excellent background for a better understanding of the principles which should govern the construction of rations for practical application in livestock feeding.

The book is certainly clearly written, authoritative and critical in its presentation, comprehensive in its treatment, but yet for the field covered, concise in its form. It can be recommended with confidence to practising veterinary surgeons and to students.

CLINICAL COMMUNICATION

Extracted Permanent Teeth Replaced

SYDNEY JENNINGS, M.R.C.V.S.
KNOWLE, NR. BIRMINGHAM

Subject.—Eight months male sealyham, under-shot jaw.

History.—A small weeping urchin brought this animal to the surgery stating that half an hour previously it had been caught in the spokes of a moving bicycle.

Examination.—The six lower incisors had been wrenched from their alveoli but as the front part of the gum was intact it held the teeth, roots upward, with the crowns pointing to the ground.

Treatment.—The crowns of the teeth were held between the finger and thumb *en masse* and lifted upwards while at the same time pulled outwards so that the gum was stretched. In this way it was possible to replace the six roots into the six alveoli all at the same time. An elastic band was stretched from one lower canine tooth running round in front of the incisors and attached to the other lower canine tooth.

The child was told the charge would be an obligation to bring the animal back again in 24 hours, again in seven days and in three months time. At the 24th hour the elastic band was removed. The young gentleman kept his promise and came at the stated times. At the seventh day the teeth were firmly set. Three months later it was impossible to see any difference from the normal mouth. The dog was then only very slightly under-shot in the jaw.

THE NOBEL PRIZES

On December 10th, the 41st anniversary of the death of Alfred Nobel, the Nobel Prizes for 1937—each amounting to £7,925—were distributed at Stockholm. The prize for chemistry was divided between Professor W. N. Haworth, PH.D., D.SC., F.R.S., director of the Department of Chemistry in the University of Birmingham, and Professor P. Karrer, of Switzerland. In medicine the prize was awarded to Professor Albert von Szent-Györgyi, of Budapest, for his work on the isolation and identification of vitamin C. In physics the prize was divided between Dr. C. J. Davisson, U.S.A., and Professor G. P. Thomson.

ABSTRACTS

[**Effects of Mineral Deficiencies in Animals.** Fairbanks, B. W. (1937.) *N. Amer. Vet.* **18.** 10.]

From experiments on animals, recorded by the author, it appears that the mineral element magnesium is indispensable for the proper nutrition of animals. Calves raised on milk alone showed symptoms of nervous instability, tetany and convulsions and the magnesium content of the blood was low. When this was raised by the administration of magnesium phosphate the condition was relieved. Magnesium metabolism is linked with that of calcium and the first manifestation of magnesium deficiency is a retention of calcium.

The condition known as grass tetany occurring in cows after they have been turned out to grass is well known. That this disease is a magnesium deficiency is supported by the fact that the magnesium content of the blood in affected cows is low and that the intravenous injection of calcium and magnesium salts is an effective treatment. In districts where the land and water supply are deficient in iodine there may be a high mortality in young stock from congenital goitre and goitre may develop in adult stock. In these areas the administration of iodine is an effective treatment. G. J. G. H.

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[**Calcium and Phosphorus Metabolism in relation to the Production of Osteodystrophic Diseases in Domestic Animals.** Malan, A. J. (1937.) *J. S. Afric. Vet. Med. Ass.* **8.** 2. 91-97.]

Abnormal mineral metabolism combined with vitamin D deficiency has been usually reported as the cause of such osteodystrophic diseases as rickets, osteofibrosis and osteoporosis; moreover, research workers have been loath to draw any aetiological distinction between them. In the present paper a short résumé of the literature is given and also discussed in the light of the results and conclusions given by the late Sir Arnold Theiler and his co-workers in South Africa. The author contends that there is a wide differentiation in the aetiology of these bone diseases, rickets being due to a phosphorus deficiency *per se* and osteofibrosis to calcium deficiency with or without vitamin D deficiency. A still more interesting contention is put forward, *viz.*, that osteoporosis is merely an intermediate phase in both rickets and osteofibrosis. He shows that whereas rickets can be produced very quickly in animals on a phosphorus deficient diet osteofibrosis is produced very slowly and that many previous workers have been misled by this time factor. He maintains that this time factor may be explained on the basis of the respective function of the responsible factors in the animal body, the calcium only being used for skeletal requirements, while the needs of the body for phosphorus are many. J. S.

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[**The Glucose Tolerance of the Cow—A Preliminary Report.** Reihart, O. F. (1937.) *N. Amer. Vet.* **18.** 8. 25-29.]

The author, by the examination of the sugar content of blood and urine samples (using sodium fluoride as a preservative for the latter), determined the effect of various doses of glucose administered intravenously to a cow, in the form of a 50 per cent. solution of dextrose.

The investigation involved the use of one animal throughout but the technique adopted permitted a week's interval between each observation.

The results of five observations using a decreasing dose, are set out, aided by the use of graphs, and indicate that the carbohydrate tolerance of the cow does not exceed 47 mgs. per kg. body weight. Smaller doses (27 mgs. per kg. body weight) had greater stimulating effects upon carbohydrate metabolism generally, as indicated by the fall in blood sugar and absence of sugar in the urine. Larger doses (100 mgs.) gave rise to a clinical reaction, characterised by profuse perspiration, diarrhoea and frequent urination. W. T. R.

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[**Copper Deficiency in Sheep in Western Australasia. A Preliminary Account of the Aetiology of Enzoötic Ataxia of Lambs and an Anaemia of Ewes.** Bennetts, H. W., and Chapman, F. E. (1937.) *Austral. Vet. J.* **13.** 4. 138-149.]

In previous papers (Bennetts, 1932, 1933) it was postulated that enzootic ataxia was a manifestation of plumbism and satisfactory results were obtained in 1933 and 1934 by administering ammonium chloride as a "deleading" agent to pregnant ewes. During the following season results were inconsistent and as it was still considered that the condition might be due to a deficiency of the "minor elements" it appeared possible that the irregular results might be ascribed to the presence or absence, in ammonium chloride, of mineral impurities. A small experiment using very pure ammonium chloride (B.D.H. "A.R.") indicated that this salt was of no value for the prevention of ataxia. During the same year examinations of organs for lead, the spectrographic examination of "A.R." and commercial ammonium chloride and of livers from affected and normal lambs, finally disposed of the lead hypothesis. These results indicated, however, that copper deficiency was of possible aetiological significance.

A flock for experiment consisting of 75 Merino ewes which had run continuously on the property from November, 1935, were mated with

South Down rams on December 5th, 1936. The ewes were divided into five groups, but only two groups are dealt with in this paper.

Group I.—Twelve ewes which from February 16th to May 3rd each received a daily drench of two fluid ounces of a 0·1 per cent. solution of cupric sulphate (B.D.H. "A.R.").

Group II.—Controls. Consisted of 25 ewes which also served to provide ewes and lambs for a remothering experiment with ewes and lambs from a known sound district.

For this purpose 16 normal ewes due to lamb in one to three weeks were brought in on April 13th, 1937. Following the ear marking of the groups, the 25 ewes were run as one flock from mating until May 18th, 1937. Subsequently, this flock and the "normal" bought-in ewes were divided into two groups which were alternated fortnightly over the small paddocks so that all sheep received identical treatment.

Most of the lambs were born in the first fortnight in June. All the ewes in Group I lambed. In Group II, three ewes proved to be non-pregnant.

The incidence of ataxia in the progeny of Group II was 100 per cent. The severe progressive form not commonly observed previously was frequently noted. Several lambs were born dead and two of these showed gross brain lesions similar to those described by Innes (1934-1935) for "sway-back," a disease which appears to be identical with ataxia. By June 19th, 1937, only ten lambs survived in Group II.

The progeny of Group I (twelve lambs) showed no evidence of ataxia and had made good growth up to the time of writing.

Examination of blood samples from ewes in both groups in April, June and July, showed a marked decrease of haemoglobin and red blood cell content in Group II. Further work with the blood of the more anaemic subjects has shown that the blood picture is very similar to that of pernicious anaemia (Whitby and Britton, 1935) which is contrary to previous conceptions of the type of anaemia present in copper deficiency. The type of anaemia existing in the sheep examined (macrocytic hyperchromic type) is usually ascribed to a deficiency or non-utilisation of the haemopoietic factor. To explain the apparent anomaly the writer suggests that in sheep adequate supplies of copper are essential for the formation, storage or utilisation of the haemopoietic factor.

Four anaemic ewes which had lost their lambs from ataxia were treated for 14 days with two fluid ounces of 0·1 per cent. copper sulphate (B.D.H. "A.R."), with double this dose for ten days and thereafter with two fluid ounces. Blood examinations showed a steady improvement approaching the normal after a month's treatment. Apart from the beneficial effect on the blood, copper treatment as early as 14 days after commencement was responsible for an amazing change for the better in the appearance of the sheep.

A preliminary experiment with salt licks containing 0·5 per cent. copper sulphate for sheep on range has given promising results. The administration of copper to ataxic lambs will arrest the progress of the disease even when their mothers are suffering from severe anaemia. Normal growth has been maintained in these lambs, although any initial abnormality in gait remains unaltered.

The methods of spectrographic examinations of livers for the presence of copper are given in full. The results showed that in normal animals the livers contained 120 to 360 parts per million of copper, while livers from ataxic animals contained only three to eight parts per million of copper. There was also a marked decrease in the copper content in the milk and the blood of anaemic ewes.

The article concludes with a brief review of the recent work carried out concerning the rôle played by copper in the animal organism.

D. W. M.

U.S.A. DRUG LAW RECOMMENDATIONS

A resolution was recently adopted by the Senate calling for a full report concerning the deaths attributed to the use of elixir of sulphanilamide, and the United States Department of Agriculture has issued a statement declaring that these fatalities demonstrate the need for a stricter drug law. The report contains the following four recommendations:—

(1) Licence control of new drugs to ensure that they will not be generally distributed until experimental and clinical tests have shown them to be safe for use. The definition of what constitutes a new drug should include (*a*) substances which have not been used sufficiently as drugs to become generally recognised as safe, (*b*) combinations of well-known drug substances where such combinations have not become generally recognised as safe, and (*c*) well-known drug substances and drug combinations bearing label directions for higher dosage or more frequent dosage or for longer duration of use than has become generally recognised as safe.

Exemption should be made for new drugs distributed to competent investigators for experimental work. A board of experts should be provided who will advise the Secretary of Agriculture on the safety of new drugs.

(2) Prohibition of drugs which are dangerous to health when administered in accordance with the manufacturer's directions for use.

(3) Requirement that drug labels bear appropriate directions for use and warnings against probable misuse.

(4) Prohibition of secret remedies by requiring that labels disclose fully the composition of drugs.

The American Medical Association consider that if no more effective method than a system of licensing can be offered, that system should be put into effect immediately. In the House of Representatives also the need for new legislation has been emphasised in order to prevent a recurrence of such a disaster.

REPORT

[**Civil Veterinary Department, Madras.** Administration Report for the Year 1936-37 (Superintendent, Government Press, Madras, price 10 annas).]

This is a rather lengthy report containing much administrative detail more interesting to those immediately concerned.

So far as can be ascertained, the superior establishment consists of one Director, twelve District Veterinary Officers and a Principal and seven lecturers employed at the Veterinary College. In addition, there is an officer in charge of the Serum Institute and a Veterinary Investigation Officer. The strength of the subordinate establishment of Veterinary Assistant Surgeons was 309 and two temporary appointments as assistant lecturers. Nine men were transferred to the newly constituted Orissa Province.

Veterinary College.—The year witnessed the inauguration of the degree course. There was a small increase in the number of students. The first year class included 25 degree course students and 22 diploma course students. There was a considerable increase in the total number of cases treated and operations performed at the College Hospital. Research work was carried out in the Pathology, Bacteriology and Parasitology sections of the College laboratory. Attention was paid mainly to an enquiry into the method of treatment of nasal Schistosomiasis, Rhinosporidiosis and its mode of infection, and contagious pleuropneumonia in goats.

Serum Institute.—The Institute has now completed its fifth year of existence and its activities continue to expand. A feature of the year's work was the conduct of experiments with spleen tissue vaccine for rinderpest to replace goat blood virus. Vaccine treatment for blackquarter was further exploited with satisfactory results.

Contagious Disease.—There was an increase in the mortality from cattle diseases, the exact reasons for which were not ascertained. The Special Veterinary Investigation Officer continued his work throughout the year.

There was a large increase in the number of patients treated in the veterinary institutions and by the itinerating staff. The number of castrations, mainly by the Burdizzo method, which is popular, also increased.

G. K. W.

The British Association's delegation (of which Sir Frederick Hobday is a member) to the jubilee meetings of the Indian Science Congress have left Bombay for a tour of India.

N.V.M.A. DIVISIONAL REPORTS

Royal Counties V.M.A.

MEETING AT THE ROYAL VETERINARY COLLEGE

ELECTION OF OFFICERS AND A FILM DISPLAY

On the occasion of the meeting of the Royal Counties Division, N.V.M.A., held at the Royal Veterinary College on Friday, November 26th, 1937, the attendance was augmented by the presence of a considerable number of senior students, eager to share in the opportunity of seeing the very instructive film illustrating the treatment, after the method of Böhler, of bone fractures in the dog and cat, and to hear Professor Wright's explanatory talk thereupon.

The Chair was occupied by the President (Colonel G. K. Walker) and there were also present: Messrs. J. R. Baxter, H. Bell, J. Bell, Professor J. B. Buxton, Major A. C. Duncan, Major J. J. Dunlop, Lieut.-Colonel H. Greenfield, Major R. C. G. Hancock, Major H. Kirk, Messrs. J. W. McIntosh, W. Martin, H. C. Shingler, Lieut.-Colonel P. J. Simpson, Major F. J. Taylor, Mr. F. W. Willett and Professor G. H. Wooldridge.

The following visitors also attended: Dr. A. W. Stableforth, Professor J. G. Wright, Messrs. S. L. Hignett, K. C. Sellers, D. Howell, M. J. Freak, M. Lochead, M. L. Bingham, Maitland, R. Beal Morris, C. W. M. Walker, D. A. J. Weedon, G. S. Mason, Charles A. Foder, J. P. Wilmot Smith, J. B. Edwards, F. O. T. Good, G. E. Joss, W. H. Bishop, D. K. Hunt, R. W. Crouther, Miss R. Baxter, Miss Marjorie V. Levie, Messrs. R. W. Roach, E. Reginald Ambrose and Jeafferson.

Obituary: The Late Dr. Bradley.—Before the business of the meeting was entered upon the PRESIDENT paid a moving tribute to the memory of the late Dr. O. Charnock Bradley, Principal of the Royal (Dick) Veterinary College. Dr. Bradley's death, of which every member not only of that Society but of the whole profession had heard with profound sorrow, was, said Colonel Walker, not only a grievous loss to veterinary education and veterinary science, but to the governing body of the profession and also to the National Veterinary Medical Association. Dr. Bradley, indeed, was really the man who inspired the present constitution of the N.V.M.A. and the "National," for that reason alone, owed a very great deal to him.

The meeting rose, on the President's call, and stood in silence in tribute to Dr. Bradley's memory.

The minutes of the previous meeting of the Society, having been published in the *Veterinary Record*, were taken as read and were confirmed.

Correspondence.—(1) From the following members, apologising for their inability to attend the meeting: Captain R. E. C. Bullen, Captain J. C. Coleman, Major G. W. Dunkin, Captain J. R. Hewer, Sir Frederick Hobday, Messrs. J. McKerlie, G. P. Male, E. S. Paterson and R. A. Willett.

(2) From the General Secretary of the N.V.M.A., forwarding proposals put forward by the Organising Committee with the object of eliminating the unsatisfactory features in the organisation of R.S.P.C.A. clinics and improving efficiency. The proposals had been made to Council, N.V.M.A., and it was now desired to ascertain the views of all the Divisions on the subject before proceeding further with the matter.

The President observed that the Council of the Society had decided that copies of this letter should be sent to every member in order that they might digest its contents and that, if the members thought it desirable to bring forward any resolution on the subject, it could the more readily and informatively be discussed. That communication, therefore, could be taken as read. He thought it was perhaps desirable that some resolution should be sent to the N.V.M.A. on the subject.

The Hon. Secretary said that he had drafted a resolution, for the consideration of the meeting, which was as follows: "That in the opinion of those present at the meeting the use of vouchers is indispensable except where free treatment is being provided at a central clinic. In country districts where the centralised scheme is in operation the number of people eligible to receive free treatment for their animals is not so great as to warrant the establishment of a special daily surgery hour. Furthermore, a special hour would necessitate the attendance of an almoner."

The meeting resolved itself into committee for the purpose of discussing this matter.

On the resumption of open meeting, the following resolution, proposed by the President, and seconded by Major Kirk, was put and carried with one dissentient: "That the recommendations of the Organising Committee of the National Veterinary Medical Association with reference to the organisation of schemes for the free treatment of sick animals of the poor be approved."

(3) From the Secretary of the N.V.M.A., inviting nominations for the recipient of the Dalrymple-Champneys Prize, awarded annually to a member of the N.V.M.A. for published scientific work.

The President informed the meeting that this matter had been discussed by the Council, but as yet they had no recommendation to put before the members. If any was forthcoming it would be laid before the next meeting of the Association.

Nominations.—Messrs. L. G. Anderson, of 112, Crescent Road, Reading, and Captain A. A. Kidd, were nominated as Fellows.

Elections.—The election of the following as Fellows of the Association was made unanimously: Major J. Bell, Maidenhead (proposer, Lieut.-Colonel P. J. Simpson; seconder, Major F. J. Taylor), and Veterinary Lieut.-Colonel B. R. Body, Second Life Guards (proposer, Mr. J. Willett; seconder, Mr. G. P. Male).

Election of Officers

President.—The retiring President (Colonel Walker) said that the next business before the meeting was the election of office-bearers for the ensuing year. Their first duty under this head was the election of President. The Council had discussed this matter and he had to report that Captain Craft, who was the senior Vice-President, did not wish to take office. He, and his fellow members of Council, would, under those circumstances, very much have liked to have their old friend Colonel Simpson as President for next year. (Hear, hear.) Colonel Simpson had already had large experience of holding office in the Society, having been, he believed, President, Secretary and Treasurer, but, as they were all aware, Colonel Simpson had the distinction this year of being President of the Royal College of Veterinary Surgeons—(applause)—and put that forward as an objection to his serving as their President this year. Colonel Simpson's duties in that exalted capacity were certainly onerous, and although they were most desirous of having him, the Council had had to accept the suggestion that, for the next year, at any rate, he did not wish to stand. The Council, therefore, and he (Colonel Walker), in the name of the Council, had much pleasure in putting the name of Colonel Greenfield to them as President for the ensuing year. (Loud applause.) He noted that that suggestion was received with acclamation and therefore he was simply going to congratulate Colonel Greenfield on being elected President for the forthcoming year and wish him every success. (Applause.)

Vice-Presidents.—Colonel Greenfield having made suitable acknowledgment, the Chairman asked the Hon. Secretary to report the Council's recommendations for the office of Vice-Presidents of the Society.

The Hon. Secretary having given the names of the retiring President (Colonel Walker), Colonel P. J. Simpson, Captain W. L. Little and Mr. J. Bell, these gentlemen were duly elected Vice-Presidents.

Council.—The Hon. Secretary announced that this year the members of Council subject to automatic retirement were Mr. J. Bell and Captain Little, and the recommendation of Council was that they be replaced by Major G. W. Dunkin and Mr. J. R. Baxter. This

recommendation was accepted and the remainder of the Council were re-elected *en bloc*, as follows: The President, Vice-Presidents, Trustees, Hon. Treasurer and Hon. Secretary (*ex-officio*), Mr. N. S. Barron, Mr. T. A. R. Chipperfield, Captain H. B. Collet, Mr. P. Crosfield, Major R. C. G. Hancock and Mr. R. A. Willett.

Hon. Treasurer.—The retirement from this office of Captain R. E. C. Bullen was announced and unanimous acceptance was made of the Council's recommendation that Major R. C. G. Hancock be appointed in his stead. A hearty vote of thanks was accorded Captain Bullen for his past services.

Hon. Secretary.—The Chairman informed the meeting that Mr. Bell had said that he would be pleased to carry on for another year and unless there were any other nominations—" No " —he had great pleasure in declaring Mr. Bell re-elected Hon. Secretary. His services to the Society in that capacity had been both long continued and valuable. (Applause.)

Hon. Auditor.—Mr. J. Willett was re-elected.

Hon. Trustees.—Captain R. E. C. Bullen, Captain W. L. Little and Major F. J. Taylor.

Representative on Council of the Victoria Veterinary Benevolent Fund.—The re-election of Major G. W. Dunkin was unanimously made.

Clinical Matters

The item on the agenda was " Morbid Specimens and Cases of Interest." None being forthcoming, Major Kirk rose to say that while he had no case to bring forward, he desired to take advantage of the presence in the room of one or two of the Professors in the College and he would like to ask them if they could tell him the use and value of ammonium chloride in ascites. He had heard that it was almost a specific for ascites in the dog.

Professor Wright—the meeting having been informed by Professor Wooldridge that this was a matter he would prefer his colleague to speak upon—said that in the older text-books on, veterinary materia medica and pharmacology, ammonium chloride was described as a mild expectorant of the reflex, irritant type. That was not strictly correct. Ammonium chloride was a normal salt—rather like sodium chloride —which had a potent saline diuretic action. It had of recent years attained some prominence as a diuretic in the treatment of oedema, but generally combined with the powerful organic mercurial diuretics—novasurol and salyrgan. He had himself in the year 1930 recorded the use of novasurol-ammonium chloride in the dog in the *Veterinary Journal* (**86**, pp. 155-157). More recently ammonium chloride had been combined with mandelic acid in the treatment of cystitis.

Place of Next Meeting.—The Chairman said that their next meeting would be the annual meeting of the Association, which was usually held at Reading. The Council recommended that again they should meet at Reading and with the same programme as in previous years.

The recommendation of the Council in this regard was approved unanimously.

Any Other Business.—Under this heading Major Kirk said that he had the Chairman's permission to bring forward the question of the R.C.V.S. Library. On behalf of the Library Committee of the Royal College he had undertaken to bring to the notice of Members, R.C.V.S., the fact that at long last they had a full catalogue of the works in that Library. Although that catalogue had been in publication a year, it was surprising that so few members knew that there was a catalogue to be obtained, at the price of 1s. per copy. He had brought a few copies with him.

Professor Wooldridge said he would like to support that appeal, but from rather a different angle, namely, to popularise the Library a little more. It was the finest veterinary library in the world and members of the profession were entitled to borrow its volumes, and it was likely that if they obtained the catalogue they would make much more use of it.

A Veterinary Film

The Chairman now observed that that evening they were to have the pleasure of seeing a film on the treatment of bone fractures in the dog and cat, produced by Messrs. T. J. Smith and Nephew, of Hull. They had also the advantage of the presence of Professor Wright, who had kindly consented to explain some of the methods shown in the film.

Professor Wright observed that the Hon. Secretary of the Society had asked him if he would say a few words by way of introduction to the film.

The film they were about to see was produced by Messrs. Smith and Nephew, of Hull, at that hospital, and it represented the application of the Böhler method of fracture treatment in small animals: Dr. Böhler, of Vienna, had introduced this method in human practice and it had attained very great prominence. The principles were that, having reduced the displacement of the fragments and restored the bone to its normal alignment, the limb was immobilised by the application of an unpadded plaster of Paris cast. The latter was applied in the form of slabs, which were very carefully moulded to the contours of the limb, rather than in the form of an encircling bandage. By this means the cast could be made intimately fitted to the leg and an almost perfect ectoskeleton was produced to replace the broken endoskeleton. The animal was enabled to use and take weight on the limb, almost immediately, with the result that neither muscle nor bone atrophy occurred and healing was much more rapid.

Böhler had pointed out that one of the great disadvantages of any form of preliminary padding was that, consequent upon progressive loosening, the padding became uneven and thereby not only reduced the effectiveness of immobilisation but predisposed to necrosis, it being movement that was the essential factor that caused necrosis, and not primarily pressure, provided that reasonable care was taken in its application. Fractures of the radius and ulna, and of the metacarpus and metatarsus presented very little difficulty and results were generally good whatever method of immobilisation was employed. The older methods of splinting held in position by encircling bandages gave fairly good results. It was when dealing with fractures of the femur, tibia and humerus, that these older methods were generally unsuccessful.

In the case of the tibia the use of angular splints was generally unsatisfactory, whilst immobilisation of the hock in a state of complete extension caused great awkwardness and discomfort.

When dealing with a broken shaft of the femur it became almost impossible effectively to fix a splint to the upper fragment with the result that movement of the lower fragment became increased rather than reduced consequent upon the weight of the material applied to it. In these circumstances, it was generally accepted that it was better to do nothing other than restrict the animal's movement by placing it in a small kennel. In puppies the result was often good; in adults, however, complete non-union often occurred. With the method about to be demonstrated to them on the screen they would see the successful treatment of a comminuted fracture of the shaft of the femur in an adult dog. It was their invariable practice to anaesthetise the animal to ensure absence of movement not only during the application of, but also the period of setting of the cast. Intravenous nembutal was employed.

They considered that that this method not only greatly facilitated the application of the cast, but also radiography and reduction of displacement. The film was self explanatory and he thought it indicated the technique of the method.

The film, which is in three parts, was now projected by Mr. Southern. It will be familiar to many members of the N.V.M.A., having been a much appreciated feature of the clinical programme at this year's Congress at Bournemouth. In each part several subjects—dogs and cats—are featured, and the complete process in each case is depicted—radiography of the fractured limb, induction of anaesthesia by the intravenous injection of nembutal, setting of the fracture, application of the "Cellona" unpadded plaster cast, the adjustment of an adhesive elastic bandage, the taking of a further (check) radiograph and finally the process of removal of the cast and progress towards resolution. This clear, informative and helpful film was most appreciatively received and, at its termination, Professor Wright replied to questions concerning both the method of treatment and the induction of anaesthesia.

In the course of his replies Professor Wright said that for intravenous injection in dogs the needles he generally employed were: for large dogs: 1·5 cm. long and 0·8 mm. outer diameter; and for small dogs and cats: 1 cm. long and 0·6 mm. outer diameter with a "dental cut" point. For very large subjects a slightly longer and stouter needle was best.

In regard to the apparently rapid recovery under this method of treatment, it must be remembered that to obtain a good radiographical picture of the healed bone it was necessary to wait several months until the callus had become completely calcified. Not infrequently when a radiograph was taken at 21 days the picture gave the impression that the bone was still quite broken despite the fact that the animal was using the leg almost normally. In this connection it was very important that they should be familiar with the picture of the epiphyseal centres of ossification in puppies, otherwise these might cause great confusion.

There was good reason for not encircling the limb with the plaster bandage. It was almost impossible to apply an encircling bandage without applying dangerous tension, whereas the slab was simply gently moulded to the leg.

In reply to a question as to whether he used nembutal indiscriminately (the enquirer instanced two cases in which a fatal issue had followed the use of nembutal by the mouth and in which nephritis had been found in one case and enlarged kidney in the other), Professor Wright said that they had, in that very building—the Beaumont Animal Hospital—anaesthetised more than 1,750 small animals with nembutal and they had done the last 600 without a death. But there was only one way in which anaesthesia could safely be induced and that was by *slow* intravenous injection, assessing the degree of anaesthesia as injection proceeded. Any method of giving nembutal which necessitated the computation of dosage must be associated with danger. Even when an animal was in health idiosyncrasy was most difficult of assessment and when one was dealing with diseased animals it was quite impossible. The injection must be made slowly and the induction of anaesthesia must take three to four minutes, because it took that time for the cells of the central nervous system to absorb it. They had found that if that method were adopted there was very little danger, provided administration was stopped when complete jaw relaxation was just attained.

Apropos nephritis, they had found that dogs with chronic nephritis, provided they were not

in a state of acute uraemia at the time, did not show any increased susceptibility to nembutal. That had been not only their experience, but it had been experimentally proved in America. The organ disease of which greatly increased susceptibility to any anaesthetic agent, was the liver, the great detoxicating organ of the body, and whenever one was dealing with sepsis the liver became very badly knocked about.

They had found, for example, in advanced cases of pyometra that the required dose of nembutal might be reduced to as little as one-half the normal, yet such animals had been successfully operated upon.

Another point, however, in favour of nembutal was that it had not a toxic action upon the liver itself, and this was in marked contrast to the case of the halogen-containing anaesthetics. One did not meet a delayed form of poisoning analagous with delayed chloroform poisoning. A point to be borne in mind was, that although an animal appeared to make a recovery this was not to be accepted as positive evidence that the liver had not sustained injury, for it was a remarkable fact that the organ could be very severely affected and yet the animal show no clinical indication of it, and that was one of the reasons why chloroform was so dangerous. What was the position with regard to nembutal? They had nembutalised dogs as many as four times in one week without having any indication of liver intoxication; moreover, that had been proved experimentally by one investigator who had anaesthetised rats daily with nembutal for a long period and at the end of that time could find no evidence of liver disease.

When they came to cats the technique of slow intravenous injection required more than average skill. There was an ever-present tendency, in part due to one's delight at having entered the vein, to make the injection too quickly, and as the total dose was a small one, over-dosage occurred. This danger could be reduced by greater dilution of the solution. Again the onset of complete jaw relaxation was the indication as to depth. Nevertheless, here again, if injection of nembutal was given sufficiently slowly, it was almost fool-proof.

Votes of Thanks.—The Chairman, in proposing a vote of thanks to Messrs. T. J. Smith and Nephew's representative, Mr. Cochrane, and to Mr. Southern for exhibiting the film brought by the former on behalf of the firm, said that, speaking personally, he had been demonstrated to and himself demonstrated to other people, at veterinary meetings for close on half a century and he felt it incumbent upon him to say that he had never been more interested than he had been that evening. It had, indeed, been a very interesting experience to him, because the whole thing was new, in the sense that it was up to date and a method of procedure that was quite foreign to them in the old days. They had to acquire knowledge in different ways, and that method of demonstration was indeed a great advance upon the times when they had to rely on the old pitch plaster and hope for the best; they did not always do so badly, either. He wished, therefore, for himself, and he was sure for all those present, to thank Messrs. Smith and Nephew for having so kindly come forward and shown them that very interesting film, which he knew that everyone had enjoyed thoroughly. (Hear, hear.)

Before he sat down, he also wanted to thank Professor Wright for his very kind assistance in so ably clarifying and explaining what the film had shown them, in answering questions, and in so materially enhancing their interest in what was occurring. (Applause.)

Addressing Professor Buxton, Principal of the Royal Veterinary College, the Chairman expressed the sincere thanks of the members to him for allowing them to come there and hold that meeting of the Royal Counties V.M.A.

Suitable acknowledgment having been made by Mr. Cochrane, and Professor Buxton having spoken of the pleasure afforded him by the visit of the Society to the College, Colonel Simpson moved a heartily accorded vote of thanks to Colonel Walker for his conduct of the proceedings. In his remarks, Colonel Simpson said that he thought that the Royal Counties V.M.A. had had the honour of being the first veterinary society to meet in those new buildings since Professor Buxton had become Principal and Dean; they were very proud of that distinction and they thanked him for the opportunity. (Applause.)

The Chairman then declared the meeting closed.

H. Bell, *Hon. Secretary.*

* * * * *

Mid-West V.M.A.*

MEETING AT BATH

A general meeting of the Mid-West Division of the N.V.M.A. was held at the Red House, Bath, on Friday, October 15th, 1937.

The President, S. V. Golledge, Esq., occupied the Chair and the following members and visitors were present. Messrs. C. R. Golledge, L. St. Bel Golledge, G. E. Henson, Esmond Brown, William Tweed, H. C. Wilkins, T. Margarson, Arnold E. Roberts, J. C. Coleman, William C. Auld, S. Codrington, J. Powell, R. Moore, W. A. Austin, P. R. Leckie, William R. Watson, J. R. Hewer, W. Webster, G. N. Gould and C. E. Perry (Hon. Secretary).

*Received for publication November 18th, 1937.

Messrs. C. G. Strachan, W. J. B. Watson and J. Richardson were present as visitors.

Letters of apology for absence were received from the following: Sir Frederick Hobday, Messrs. Eardley, Rees and Adams.

The minutes of the previous meeting were read and confirmed.

Correspondence.—Letters were read from the N.V.M.A. as follows:—

(1) In reference to the Attested Herds Scheme, 1937, giving details of the scale of fees to be paid to private practitioners for tuberculin testing under this scheme, as laid down by the Ministry of Agriculture and Fisheries.

(2) A letter asking the Association to support the following resolution from the Royal Counties Division: "We, the members of the Royal Counties Veterinary Medical Association, in supporting the Attested Herd Scheme of 1937, approve the scale of fees laid down for remuneration of the veterinary practitioners by the Ministry of Agriculture and Fisheries, and are agreed that it is a fair scale of minimum fees to be charged for the testing of commercial herds."

After full discussion it was proposed by Mr. C. R. Golledge and seconded by Mr. Margarson, that the Association approve the first part of the resolution, namely, the scale of fees laid down for remuneration of the veterinary practitioners by the Ministry of Agriculture and Fisheries, but that the second part of the resolution, namely, the fees charged for commercial herds, be left to the discretion of the individual practitioners.

This was carried.

The meeting then went into committee to discuss a letter from the Royal College of Veterinary Surgeons in reference to a complaint received. This was left to the Council for further consideration.

Paper.—The President then called upon Mr. Gould to read his paper on "Some Observations on the Feeding and Management of a Dairy Herd." The following members took part in the discussion: Messrs. C. E. Perry, C. R. Golledge, T. J. Margarson, W. Tweed, J. R. Hewer and the President. [Mr. Gould's paper is reproduced at the commencement of this issue.—*Editor.*]

A hearty vote of thanks to Mr. Gould was proposed by the President, who said that the paper was brimful of information and that the members were very much indebted to Mr. Gould for coming to Bath and giving such a practical paper. This was seconded by Colonel Henson, who also thanked Mr. Gould for his paper.

The vote of thanks was carried with acclamation and Mr. Gould suitably responded.

The members afterwards adjourned for tea.

C. E. Perry, *Hon. Secretary.*

Derbyshire V.M.A.*

MEETING AT SUTTON BONINGTON

A meeting of this Division was held at the Midland Agricultural College, Sutton Bonington, on Wednesday, October 13th, 1937.

There were present Mr. George Eaton (President), Messrs. P. Abson, L. A. Auchterlonie, H. S. Cockburn, G. Durrant, J. Drummond, O. V. Gunning, A. H. Hunter, H. W. Steele-Bodger, H. L. Torrance and W. J. Ironside (Hon. Secretary), with the following visitors: Professor J. G. Wright, Messrs. W. Simpson, J. M. Rorrison and R. H. Ewart.

Apologies for absence were received from Messrs. T. V. Bagshaw, J. G. Crowhurst, H. McIntyre and W. L. Sheffield.

The minutes of the last two meetings were adopted.

Membership.—Mr. J. G. Crowhurst was elected a member of the Division, and the nomination was made of Mr. R. H. Ewart.

Correspondence.—(1) From Messrs. Smith and Nephew, Hull, offering for projection a film on the treatment of fractures in the dog and cat. The meeting wished to accept this offer and to have the film shown at the next meeting.

(2) From the Council, N.V.M.A., asking the Division to give consideration to a resolution regarding fees, for tuberculin testing, that had been forwarded by the Royal Counties Division. The meeting agreed to support the resolution.

Election of Office Bearers for 1938

The following elections were made:—

President.—W. J. Ironside.

Past-President.—George Eaton.

Vice-Presidents.—H. L. Torrance, E. Wilkinson.

Hon. Secretary and Treasurer.—L. A. Auchterlonie.

Auditors.—P. M. Evershed, G. Durrant.

Council.—T. V. Bagshaw, G. Durrant, O. V. Gunning, W. L. Sheffield, H. L. Torrance and E. Wilkinson.

Subscription for 1938.—This was fixed at 10s.

Matters Relating to Everyday Surgery

Address.—An address on the above subject was now given by Professor J. G. Wright, of the Royal Veterinary College.

In this address Professor Wright emphasised the importance of having a clear conception of the basic principles of surgery in order that factors that hinder good surgery rather than help towards it might be avoided.

Among the points upon which he laid stress were:—

(1) That dressings should be non-destructive and non-irritant.

*Received for publication November 30th, 1937.

(2) That no infection should be added to that already present, even when that present was very considerable.

(3) That all manipulation should be gentle.

(4) That all haemorrhage should be promptly and appropriately controlled.

(5) That proper drainage should be provided.

With reference to the control of haemorrhage, Professor Wright said that as veterinary surgeons we tended to neglect this. This neglect was probably due to the fact that much of our surgery was carried out on healthy animals in which some degree of haemorrhage did not have very harmful effects. In dealing with animals that were ill, however, it was important that haemorrhage should be reduced to a minimum.

Dealing with surgical operations on healthy animals, the speaker said that the only result that could be considered satisfactory was 100 per cent. success: if the results obtained were below this it could only mean that something was wrong with the surgery. He gave the results of his own experience in performing ovaro-hysterectomy in cats and showed that in over 14,000 animals there had been 18 deaths. He was emphatic in saying again that there should have been no deaths. In three of the cases death was due to feline distemper, the animals having been in the incubative stage at the time of the operation: all that could possibly be done to guard against this was to take the animal's temperature before operating.

Surgery on diseased animals was very different because here, amongst other things, the animal was more susceptible to the anaesthetic and the power of repair of the tissues was reduced. With reference to susceptibility to anaesthetics, Professor Wright stated that in the case of nembutal the dose required to induce anaesthesia constituted a useful indication as to the state of the animal; if this dose was less than half the calculated dose the animal was in a dying condition. It was important that there should be as little delay as possible between the time that the diagnosis was established and the time that the operation was carried out.

When he had concluded his talk Professor Wright performed an operation on a dog and removed calculi from the urethra.

The talk and the demonstration were much appreciated by the members present and Professor Wright was accorded a hearty vote of thanks.

The meeting ended by the company having tea together.

At tea a collection, amounting to one-and-a-half guineas, was made on behalf of the Victoria Veterinary Benevolent Fund.

W. J. Ironside, *Hon. Secretary.*

ROYAL COLLEGE OF VETERINARY SURGEONS

Membership Examinations, December, 1937

LIST OF SUCCESSFUL CANDIDATES

(*Continued from page* 1607.)

Glasgow

Animal Management

Anderson, J. A.
Brown, James (Airdrie) (credit)
Cairns, J. T.
Caldwell, W. D.
Ferguson, C. M.
Forsyth, A. M.
Fraser, John
Logue, F. W. (credit)
McCance, C. M.
McEvoy, B. (credit)
Maclure, W. B.
Matheson, Archd.
Monie, R. F.
Neil, H. J. D.
Scott, Alex.
Simpson, W. F.
Steele, James
Stewart, Thos. (credit)
Wilson, W. R.

Edinburgh

FIVE YEARS' COURSE.

First Year:

Allen, D. C.
Allen, T. H.
Bannister, D.
Chisholm, L. P. S. (C)
Cloke, J. N.
Ellse, J. B.
Garden, J. F.
*Grant, J. G. D.
Grundy, H.
*Hagri, M. A. A. M.
Heatley, D.
Masterton, R. S.
Pearson, R. G.
Robertson, K. G.
Smith, D. C.
Taylor, A. M.
Watson, Harry

* Denotes second class honours.
(C) Denotes credit in Chemistry and Physics.

Second Year:

Aitken, H. F. M.
*Bamber, W. B.
Barrie, N. M.
Birkett, J. D.
Birtwhistle, J. F.
Breckenridge, R. C.
Cameron, Douglas (P)
Campbell, J. D.
Carus, J. G.
Crichton, D. R. V.
Etoe, D. R.
Fairweather, Alex.
Fletcher, W. E. (P)
Flodin, P. M.
Gordon, W. A. M.
Hall, David
Johnson, J. E.
Littler, L. P.
McDougall, J. B.
Mackenzie, H. H. H. S.
Mason, George
Milne, F. J.
Milne, W. M. (P)
Nelson, D. (P)
O'Neill, J. A.
Powley, G. S.
Robinson, Caulfield
Ross, James
Saksena, P. D.
Sinclair, W. B. V. (P)
Storrar, D.
Wood, R. I.

* Denotes second class honours.
(P) Denotes credit in Physiology.

Animal Management.

Aitken, H. F. M.
Bamber, W. B.
Birtwhistle, J. F.
Bodenham, C. E. M. (credit)
Brydon, D. A. D.
Choudary, C. V. G.
Coleman, J. G. (credit)
Coulton, R. H. M.
Cruickshanks, John
Davis, R. H. K.
Dixon, Edwin
Douglas, R. A.
Dunn, C. W.
Fletcher, W. E.
Flodin, P. M.
Ford, M. P.
Hall, David
Houston, T. H.
Hu, T. P. (credit)
Irvine, R. E.
Johnson, J. E. (credit)
Lambert, A. L.
Lamont, A. A.
Lancaster, J. E.
Loughran, J. D. (credit)
McCormac, S. F. (credit)

MacIntosh, A. S. — Powley, G. S.
Milburn, W. B. — Robinson, Caulfield
Milne, F. J. — Saksena, P. D.
Orr, F. H. — Storrar, David
Pook, H. L. — Waugh, Robt. (credit)

THIRD YEAR:

Blackburn, P. S. — McCrea, Robt. (H)
Britten, A. F. F. (A) — McLaggan, Robt.
Christie, G. J. — Millar, P. G.
Comrie, K. G. — Murray, E. G.
Douglas, J. F. — Sutton, E. G.
Evans, W. E. (A) (H) — Turner, A. L. (A)
Hartley, Wentworth — Wilson, J. G.
Hathorn, D. S. — Ziffo, G. S.
Leslie, G. D.

(A) Denotes credit in Anatomy.
(H) Denotes credit in Hygiene.

FOURTH YEAR:

Adams, J. A. — Milne, A. H.
Cameron, I. W. — Newhouse, James
Carmichael, M. A. — Owen, R. H.
Hood, D. M. — Parker, Eric
Jagger, Frank — Rae, A. G.
Laird, David — Ross, K. A.
Lawson, John — Stewart, J. A. C.
Luxmoore, H. B.

FIFTH YEAR:

Brander, G. C. — Haggie, W. G.
Byrne, F. A. — Leason, Arthur
Campbell, S. R. — Lockhart, D. M.
Gregor, W. W. — Mahamooth, T. M. Z.
Grunsell, C. S. — Simison, J. T.

FOUR YEARS' COURSE.

Class D.

Gray, W. S. — Muir, R. O.
Macrae, Finlay — Potts, J. P. A.
Morris, P. G. D.

London

FIVE YEARS' COURSE.

FIRST YEAR:

Bagenal, B. — O'Reilly, L. B.
Balls, G. — Plumpton, K. E.
Hartley, J. C. — Rawlinson, W. E.
Heeley, D. M. — Sugden, W. R. C.
Johnston, Miss B. G. — Thompson, I. K.
Maxted, J. E. — Vaughan, A. W. (B)
Molloy, Miss S.

(B) Denotes credit in Biology.

SECOND YEAR:

Bezant, Miss K. M. — Morrison, J. M.
Buckner, D. R. P. — Parsons, J. H.
Butcher, B. — Pilgrim, E. G.
Canti, J. A. — Rudland, G. A. H.
Cooke, R. F. — Somerwill, L.
Fox, Miss W. E. — Steel, P. G.
Geffen, L. R. — Stephens, A. D.
Jordan, F. T. W.

THIRD YEAR:

Dickson, S. J. — Makinson, J. B.
Farmer, Miss G. J. — Morgan, D. G.
Foden, C. A. — Morgan, K. U.
Francis, Frederick — Nixon, George
Gardner, J. C. A. — Parker, G. B.
Hughes, A. P. — Pembrey, H. G.
Jagger, Miss K. M. (H) — Regnauld, Miss L. A.
Lawfield, F. G. — Thomas, T. I. (H)
Lewis, R. W. E. — *Willett, D. N.

* Denotes second class honours.
(H) Denotes credit in Hygiene.

FOURTH YEAR:

Bennett, G. H. — Massie, Miss M. N.
Berger, John — Mathew, P. A.
Bunker, J. A. — Mead, N. St. C.
*Davison, I. — Neal-Morris, R.
Dean, P. W. — Owen, D. W.
Edwards, J. B. — Pemsel, J. D.
Edmonds, B. C. M. — Piercy, S. E.
Fussell, Miss M. — Ridge, J. E. M.
Good, F. D. T. — Roach, R. W. (Paras.)
Green, R. A. — Roberts, Miss D.
Harrop, A. E. — Rowson, L. E.
Humm, R. L. — Spriggs, D. N.
James, C. D. — Yalden-Thomson, Miss M.
Llewellin-Evans, T.

* Denotes second class honours.
(Paras.) Denotes credit in Parasitology.

FIFTH YEAR:

Bishop, W. H. — Hiles, H. J.
Brancker, Miss W. M. — Howell, Miss D.
Ellis, A. A. B. — Isherwood, D. A.
Greatorex, J. C. — James, J. P. (S)
Green, A. R. — Roe, J. E. R.
Gwyer, R. G. — Scutt, Miss C. M.
Harmar, J. B. — Smith, F. W. A.
Harrow, W. T. — Spratling, F. R.

(S) Denotes credit in Surgery.

FOUR YEARS' COURSE.

Class C.

Hignett, Mrs. M. G. — Holmes, C. R.

Class D.

Abbott, A. A. — Kirk, M.
Abbott, A. V. H. G. — Nicol, I. E.
Camps, E. T. — Peyton, A. W.
Kaufmann, E. — St. John, Miss S.

(To be concluded.)

Liverpool Degree of B.V.Sc.

Following is the University of Liverpool, School of Veterinary Science, Examination List for December, 1937, in connection with the University Degree of B.V.Sc.:—

FINAL EXAMINATION (*New Regulations*). *Part I.*—Jones, S., Shirley, G. N.; *Part II.*—Jones, S., Shirley, G. N.

FINAL EXAMINATION (*Old Regulations*). *Part II.*—Young, S. C.

FOURTH EXAMINATION.—Cassar, A. J., France, W. H.

THIRD EXAMINATION. *Part I.*—Arthur, G. H. (with Distinction), Carr, W. H., Dalby, Mary, Firth, T. B., Hanbury, D. G. (with Distinction), Hornby, R. B., McCay, Joan R., Smallwood, Ethel, Sutton, D. C., Willis, G. A.

Part II.—Craig, N., Hornby, R. B., John, H. M., Willis, G. A.

Part III.—Craig, N., Hornby, R. B., Shaw, G. D.

SECOND EXAMINATION.—Clarke, R., Coates, P. D. L., Dye, R. W., Edwards, C. M., Lewis, P. D., Scott, Mary F.

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In a Berlin hall gay with Christmas decorations 190 dogs have been welcomed and rewarded for their task of leading blind men. Each dog received a warm rug, mat and large packet of dog biscuits and other dainties.—*Exchange.*

In Parliament

The following questions and answers have been recorded in the House of Commons recently:—

Agriculture (Poultry Diseases)

Mr. Granville asked the Minister of Agriculture whether he is prepared to consider the creation of a poultry institute for the purpose of supplying the poultry industry with facilities and service on poultry diseases?

Mr. W. S. Morrison: Considerable advisory and educational facilities already exist in connection with poultry disease problems. Whether there is a need for supplementing these facilities is a matter which is, I have no doubt, engaging the attention of the Poultry Technical Committee.

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Foot-and-Mouth Disease

Mr. Short asked the Minister of Agriculture whether he is aware that importers of goods from the Continent use packing straw over and over again; whether any research has been made as to whether this straw may be a source of foot-and-mouth disease; and whether he proposes to introduce stricter methods of control and supervision?

The Minister of Agriculture (Mr. W. S. Morrison): The reply to the first and second parts of the question is in the affirmative. The Foot-and-Mouth Disease (Packing Materials) Order, of 1926, makes provision to the effect that when hay and straw has been used for packing purposes, it must not be brought into contact with any animal in Great Britain, or removed from the premises except for use as packing, or for destruction, or for return in a crate or box to the sender for further use as packing. When such purposes have been served the material is required by the Order to be destroyed. The Order is enforced by local authorities, and, according to the reports of the Ministry's divisional inspectors, is generally well observed. The experiments of the Foot-and-Mouth Disease Research Committee show that on hay and straw the dried virus of foot-and-mouth disease might remain active for some weeks, but in the absence of evidence against this material, there does not appear to be any case for further action.

Mrs. Tate asked the Minister of Agriculture what official experiments or investigations have been carried out or are proposed in order to investigate the theory, that the fly of the genus borborus is a carrier of the virus of foot-and-mouth disease?

Mr. Morrison: The habits of the flies of the genus borborus have been considered by the Foot-and-Mouth Disease Research Committee, whose opinion is that there is no evidence indicating that the members of this genus are responsible for the spread of foot-and-mouth disease.

Mrs. Tate: Is my right hon. Friend aware that Professor Muschamp, Entomologist at Leicester Museum, is convinced that this fly is the source of the disease, and has any money been spent on investigating it?

Mr. Morrison: I am not aware of the opinions of the gentleman to whom the hon. Lady refers. Perhaps there may be some misunderstanding, as the genus named in the hon. Lady's question is not known to exist. The question as to flies of the genus borborus has been investigated by the Research Committee, and they have expressed the opinion which I have indicated in the answer.

Mrs. Tate: Is is not a fact that I am not responsible, but that it was the Clerks at the Table who spelled my fly wrongly?

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Johne's Disease

Mr. Price asked the Chancellor of the Duchy of Lancaster, as representing the Lord President of the Council, whether any progress has been made in the search for a remedy for Johne's disease in cattle?

The Chancellor of the Duchy of Lancaster (Earl Winterton): Until a completely satisfactory diagnostic agent for the detection by specific reaction of this disease is available, little progress can be made towards its cure. The committee on Johne's disease of the Agricultural Research Council have been engaged for some time in a careful comparative test of certain diagnostic agents. The work is progressing satisfactorily.

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Milk Designations

Mr. De la Bere asked the Minister of Health whether, under the Milk (Special Designations) Order, 1936, he is aware that the charge imposed by the county councils for establishments at which milk is produced and bottled is two guineas; and whether, in view of the fact that all that is entailed is simply registration, steps will be taken to reduce this charge?

The Parliamentary Secretary to the Ministry of Health (Mr. Bernays): The fee referred to is the maximum which may be charged for licences for designated milks under the Order of 1936 and it may be reduced or dispensed with at the discretion of the county council. The granting of the licences in question, however, is not simply a matter of registration, but is subject to the council being satisfied that the prescribed conditions as to production and bottling are complied with, and my right hon. Friend sees no ground for modifying the scale of fees set out in the Order.

Mr. De la Bere: Does the Minister realise that the producer-retailer wants every possible assistance at the present time?

"RATIONALISATION" OF MARKETS

Important steps towards the rationalisation of cattle markets are now being taken by the Livestock Commission and by local authorities who are in consultation with the Commission on the provision of improved market facilities. Plans under consideration provide for the erection of new markets at several leading livestock centres; the reorganisation and extension of many existing markets in which congestion has become acute, and, eventually, the elimination, in certain areas, of small markets which are considered, after consultation with local bodies, to be inefficient and redundant. Centres for which new markets are being planned include Spalding, Salisbury and Exeter, and improvements are being made at Peterborough, Cambridge, Louth, Hereford, Rugby and Swindon.—*Farmers' Weekly.*

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Sir Robert Gower, M.P., Chairman of the R.S.P.C.A., recently presented to Mr. E. A. Radford, M.P., at the House of Commons, the silver medal of the Society in recognition of his services in piloting through the House the Exportation of Horses Act.

A Merry Christmas to all our Readers

Notes and News

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

Jan. 3rd, 1938.—Meeting of the Editorial Committee, N.V.M.A., at 36, Gordon Square, W.C.1, 4 p.m.

Jan. 3rd.—Meetings of Committees, N.V.M.A., at 36, Gordon Square, W.C.1.

Jan. 4th.—Meeting of Council, N.V.M.A., at the Connaught Rooms, Great Queen Street, Kingsway, W.C.2. Meetings of Committees, N.V.M.A., at 36, Gordon Square, W.C.1.

Jan. 11th.—Meeting of the Derbyshire Division, N.V.M.A., at Sutton Bonington, 2.30 p.m.

Jan. 12th.—R.C.V.S. Committee Meetings.

Jan. 13th.—R.C.V.S. Committee Meetings.

Jan. 14th.—**R.C.V.S.** Committee and **Council** Meetings.

Jan. 14th.—Ladies' Guild dance in aid of the Victoria Veterinary Benevolent Fund, at Princes Galleries, Piccadilly, W.

Feb. 3rd.—R.C.V.S. Council Election: Voting papers issued to overseas members.

Aug. 21st-25th.—Thirteenth International Veterinary Congress, Zürich.

Aug. 26th-27th.—Thirteenth International Veterinary Congress, Interlaken.

Sept. 5th-9th.—Annual Congress, N.V.M.A., at Glasgow.

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CENTRALISED VETERINARY SERVICE

Minister's Reply to N.V.M.A.

The Association has received a full reply, from the Private Secretary to the Minister of Agriculture, to its request for an interview with the Minister himself. The Minister unfortunately does not see his way to acquiesce in this proposal. Next week we shall publish the Minister's reply in full. At the moment of going to press the Council is in session discussing the situation which has arisen.

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PERSONAL

Dr. E. M. Robinson, sub-director of the Division of Veterinary Services at Onderstepoort, has been awarded the senior Captain Scott medal for scientific research in South Africa.

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Forthcoming Marriage.—ANDREW—JOHNSTON. The engagement is announced between Archibald Houston Andrew, M.R.C.V.S., D.V.S.M., elder son of Mr. and Mrs. A. H. Andrew, The Grange, Ware, Herts, and Joan Doris, only child of the late Captain John T. Johnston, Royal Scots, of Marchwood, Bathgate, and Pottishaw, West Lothian, and Mrs. J. D. Johnston, 19, Wester Coates Avenue, Edinburgh.

Marriage.—MACRAE—MUNRO. At Columba Hotel, Inverness, on December 17th, 1937, by the Rev. G. W. Dalgleish, Monymusk, assisted by the Rev. S. H. Warnes, Buckie, Donald R. Macrae, son of Mr. and Mrs. Alexander Macrae, Tighnacoille, Alness, to Margaret, daughter of the late Mr. A. J. Munro (Fishery Officer) and Mrs. Munro, Buckie.

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R.C.V.S. OBITUARY

EDMONDSON, R., Nakuru, Kenya Colony. Graduated Edinburgh, July 20th, 1887. Died November, 1937.

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LAYCOCK, Herbert Reginald, 53, Norfolk Street, Sheffield. Graduated Liverpool, December 19th, 1905. Died December 15th, 1937; aged 54 years.

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HORNER, Arthur Jeff, Grove House, Witham, Essex. Graduated Edinburgh, December 19th, 1903. Died December 14th, 1937; aged 56 years.

Mr. Horner, who died at Woodside Farm, Farlington, Yorkshire, the residence of his sister, Mrs. Joseph Johnson, was well-known and highly esteemed in Mid-Essex, especially amongst the farming community, among whom he had moved and worked for just over a quarter of a century, during which time he and his professional partner, Mr. Philip Ledger, of Maldon, had built up an extensive and flourishing practice.

In spite of his busy life (says the *East Anglian Daily Times*) he found time to take interest in local affairs, and for the past two years he had been a member of the Witham Urban District Council, representing Rivenhall South Ward.

After graduation, Mr. Horner entered the Colonial Service with the British Government, and was for three years in British East Africa, until, when on a 60-mile journey, he was heavily thrown and crushed by his horse. Eventually he was invalided out and returned to England.

After being a lecturer at Kepsington, he bought the veterinary practice belonging to a Mr. Wilson, at Witham, a little over 25 years ago, and he married Miss W. Maddocks, daughter of a Whitchurch farmer and landowner, and went to reside in High Street, Witham.

During the Great War Mr. Horner had the care of some 800 horses at Colchester Barracks. It was shortly after the War that he and Mr. Ledger, of Maldon, entered into partnership.

In addition to his professional activities, Mr. Horner owned and farmed Threadgolds Farm, Great Braxted, and managed farms at Purleigh and Mundon for Miss Grimes. He was also a

veterinary inspector for the Essex County Council, and, before full-time inspectors were appointed about two years ago, he was an inspector for the Ministry of Agriculture.

He is survived by his widow and two sons, one a barrister and the other a surveyor.

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Jarvie, John, The Firs, Carluke, Lanark. Graduated Glasgow, April 17th, 1875. Died December 13th, 1937; aged 87 years.

Mr. John Jarvie, who died at Airton, Crossford, the residence of his son-in-law, commenced practice in Carluke nearly 60 years ago, and up to his death he held an appointment under the Lanarkshire County Council as Veterinary Meat Inspector for the Upper Ward of Lanarkshire.

He was a member of Carluke Parish Council for many years. He was pre-deceased by his wife, who died in January this year, and is survived by two sons and two daughters.

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GENERAL OBITUARY

Professor Nuttall

We record with much regret the death, which occurred on Thursday of last week, at the age of 75, of Dr. G. H. F. Nuttall, Emeritus Professor of Biology, at Cambridge, who possessed an international reputation for his researches in bacteriology, parasitology, hygiene and physiology. "Professor Nuttall's discoveries," says *The Times*, "possessed an immediate practical importance to mankind. With his friend, the late Sir Patrick Manson, he did more perhaps than anyone else in this country to stimulate work on the nature and prevention of parasitic diseases.

"In 1899 he went to Cambridge to teach bacteriology and preventive medicine, and in the same year he was appointed to the newly founded Quick Professorship of Biology and became a Professorial Fellow of Magdalene College. The generosity of the late Mr. and Mrs. P. A. Molteno established the Molteno Institute for Research in Parasitology. It was the first of its kind in the British Isles, and Nuttall, its first director, devoted the rest of his career mainly to its development. In addition to his books he contributed many papers to scientific journals. He also wrote many hundred reviews in German, which helped to make British and American scientific work better known on the Continent.

"One of his most important discoveries was to show that blood and other body fluids possess the power of killing bacteria, a discovery which is the basis of all work on antitoxic sera. His discovery of the precipitin test provided medico-legal experts and criminologists with a sure method of indentifying the nature of minute traces of blood, whether human or animal. Its application has been of great value, for the proof of both innocence and guilt. His book, 'Blood Immunity and Blood Relationship' records the results of 19,000 tests carried out on some 600 species of animals' blood. But perhaps his greatest work was the long series of studies in parasitology. They began to appear in 1897, and in 1899 he published his essay on insects as carriers of bacterial and parasitic diseases in man and animals. In conjunction with the late Sir Arthur Shipley he published a series of articles on the structure of the mosquito, which are a model of their kind. Later he studied "red water" in dogs, cattle, and horses, and assisted in discovering a remedy which has saved the lives of thousands of animals in all parts of the world. His investigations of the ticks responsible for disease-transmission appeared in parts, written alone or in conjunction with fellow-workers, from 1908.

"During the War Nuttall turned to the study of lice infesting man, and discovered methods of combating this infliction among the troops. His many bacteriological investigations included the discovery, in conjunction with Welch, of the bacillus which causes 'gas gangrene.'"

Professor Nuttall collaborated before the War with S. Hadwen in experiments with trypan blue for the cure of piroplasmosis, facilities for the work being afforded by the late Sir Stewart Stockman at the Ministry's laboratory at Alperton.

Professor Nuttall was the founder and chief editor from 1901 till this year of the *Journal of Hygiene*; he also founded, in 1908, *Parasitology*, which he edited till 1933. He was elected F.R.S. in 1904, was an honorary or corresponding member of numerous foreign scientific societies, and was Sc.D. of Cambridge, and an honorary doctor of five other universities. He served on many advisory committees for the Government, and conducted investigations on behalf of the Ministry of Health, the Royal Army Medical Corps, and the Government of South Africa. He received the Legion of Honour and the Belgian Order of Leopold II.

* * * * *

FOOT-AND-MOUTH DISEASE

Foot-and-mouth disease was officially confirmed, on Saturday of last week, among cattle at Woodborough, Wiltshire, and among sheep at East Garston, near Newbury, Berkshire. The restricted area now comprises parts of Wilts, Dorset, Somerset, Hants, and Berks, together with a part of one parish in Oxfordshire.

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Two further outbreaks of foot-and-mouth disease were confirmed on Monday in the vicinity of Salisbury. In one case 62 head of dairy cattle grazing near Stonehenge, where a flock of 500 sheep had previously been infected, were involved. The other outbreak was at Allington. Salisbury is now approximately in the centre of a controlled area of 1,000 square miles which extends over six counties. Consequent on the confirmation of an outbreak of foot-and-mouth disease at a farm at Shaftesbury, Dorset, 83 head of cattle and 241 sheep were slaughtered on that day. Later, an outbreak was confirmed at Lyndhurst.

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Last week's issue of *Country Life* contained a valuable survey of the foot-and-mouth disease position in this country at present and explained the policy which the Ministry of Agriculture pursues in stamping out the disease. In it, Sir Frederick Hobday gave a comprehensive answer to the critics of the slaughter policy. Commenting on this matter *The Times* observes, "Farmers, although they are the chief sufferers when live-stock are slaughtered, are first supporters of the Ministry's policy."

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Owing to the spread of foot-and-mouth disease in Germany the annual agricultural show in Berlin will not take place next year.

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According to a report from Moscow, nine veterinary surgeons have been executed at Irkutsk, Eastern Siberia, for "spying and wrecking on behalf of a foreign power," it being alleged that their particular activities in this regard concerned "the destruction of 108,000

cattle by starving the animals and spreading foot-and-mouth disease." In this connection, a quite original way of dealing with outbreaks of foot-and-mouth disease. It is, of course, only an extension of their well-known 'slaughter policy.'"

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In view of the need which has arisen in recent months for widespread publicity for the facts relating to foot-and-mouth disease, the Ministry of Agriculture has recently issued a memorandum on the subject, dealing fairly fully with the character and history of the disease; the Ministry's policy and procedure in dealing with outbreaks; details of the outbreaks in October and November of this year; measures taken to prevent the introduction of infection from abroad; research; and finally a note on the export trade in British pedigree stock in relation to outbreaks of the disease.

The memorandum is being published in the Ministry's Journal for January, 1938, to be issued on January 1st. The Journal is to be obtained from H.M. Stationery Office or through any bookseller, price 6d. net per copy, or 6s. per annum post free.

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SOUTH AFRICAN VETERINARY MEDICAL ASSOCIATION

Three-Day Meeting at Onderstepoort

A three-day meeting (the 32nd general) of the South African Veterinary Medical Association was held at Onderstepoort on October 27th, 28th and 29th, 1937.

On the morning of the first day, following the meeting for business, Messrs. J. G. Boswell and A. R. Theil presented a paper on "Canine Hysteria"—a disease which apparently is becoming very prevalent among canines in South Africa. The authors dealt with the history and spread of the condition; the various theories regarding its aetiology (*viz.*, distemper, digestive disturbance, toxaemia, verminosis, irritation, environment, etc.); the symptoms, course, prognosis, and curative and preventive treatment.

The second paper of the morning was on "The Presence of Hydrocyanic Acid in Stock Feeds and Other Plants," the essayist being Dr. D. G. Steyn, while the afternoon was occupied by the exhibition of films of scientific interest, by Messrs. Bayer Pharma, Ltd.

"Brucellosis" was the subject of the first session on the morning of October 28th, being dealt with jointly by Mr. W. G. Barnard and Dr. E. M. Robinson. The former, speaking on "Contagious Abortion in Bovines" considered the disease mainly as it occurs in East Griqualand, indicating the history and spread of the condition; the difficulties encountered in dealing with it and giving data collected on certain farms on which accurate records have been kept. Dr. Robinson's contribution was divided into several sections dealing with different aspects of the problem. Amongst the matters discussed were: Comparison of brucella infections in man and various animal species, methods available for the diagnosis of the disease; public health aspects of brucellosis; immunisation against brucella infection; problems which have been encountered in the field and which have been the subject of correspondence with veterinarians; methods of dealing with contagious abortion in cattle in different countries. The problem of brucellosis in South Africa, particularly as it affects cattle, has, said Dr. Robinson, become a very important one. Up to the present there has been no definite policy in dealing with the problem, and bovine contagious abortion has become so widespread that energetic measures will have to be adopted to reduce the incidence and to prevent further spread.

At the second session "Calf Paratyphoid" was discussed by Professor M. W. Henning in a paper giving a short historical review and discussion of the literature and also treating of the aetiology of calf paratyphoid and a comparison with other forms of paratyphoid; the methods of infection and the transmission to both man and animals; food poisoning in human beings; symptomatology and lesions, and prophylaxis.

Before the morning ended the meeting held discussions on (*a*) Calf Diphtheria; (*b*) Trichomonas (both introduced by Dr. Robinson) and (*c*) Swayback in Lambs—opened by Dr. de Kock.

"Diseases of Chicks"—a joint paper by Dr. J. J. Bronkhorst and Mr. J. W. D. Coles—occupied the assembly for the afternoon. The paper, which was illustrated by specimens and bleeding for B.W.D., included a brief description of all those diseases of chicks which are considered to be of considerable importance to the poultry industry in South Africa, such as paralysis of Morris, flavines, slipped tendon, avitaminosis A, overheating and chilling, bacillary white diarrhoea, fowl typhoid and other salmonelloses, *e.g., S. aertrycke, S. arratum* and *S. amersfoort*—coccidiosis, spirachaetosis, aegyptionellosis and coryza.

On the last day of the meeting Dr. D. G. Steyn spoke on "Fluorine Poisoning of Man and Animals." His address was a comprehensive survey dealing with the following aspects: Flourine-containing substances used in licks for stock, and for household and other purposes; the toxic and lethal doses of fluorine preparations; fluorine in our food and drink and its legal aspect; the effects of fluorine on the different organs; maternal transference of fluorine; symptoms and *post-mortem* appearances of fluorine poisoning; histology; the toxicity of products derived from animals suffering or dead from fluorine poisoning; treatment and prevention.

A consideration of certain aspects of veterinary problems as encountered overseas, by Dr. de Kock, was followed by "Speculations on the Incidence of Anthrax in Bovines" by Mr. R. Clark, in which the author contended that the majority of anthrax outbreaks do not occur as a result of continuous exposure to the chances of slight infection from ground, grass and water, but are more probably the result of gross infections from cadaver material and bones. This offers an explanation for the frequency of isolated deaths. It is suggested that anthrax outbreaks are associated with pica, and thus to a considerable extent with phosphorus deficiency. Interesting observations bearing on this contention were brought forward.

A demonstration by Dr. J. Quinlan—"Ventriculectomy laryngis"—terminated the scientific programme of a most interesting meeting.

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WARBLE-FLY PEST

Deputation to the Ministry of Agriculture

A deputation from the Hide Improvement Society was received last month by permanent officials at the Ministry of Agriculture for the purpose of discussing various matters relating to the working of the Warble-fly (Dressing of Cattle) Order of 1936.

Mr. Lowden, manager of the Society, gave an account of the educational work which the

Society had done in recent years with a view to encouraging farmers to comply fully with the requirements of the Order. He referred in particular to the exhibits at the leading agricultural shows. Another of the Society's activities involved the distribution of their brochure which dealt in popular terms with the warble-fly and the methods of treating cattle. During the past year the Society had supplied copies of this to the authorities in the majority of counties, 120,000 copies being distributed.

Mr. F. R. Newton, President of the National Federation of Hide and Skin Markets, then submitted statistics supplied by its members showing the number of warbled hides passed through their markets during the past season. These figures showed that the proportion of hides with open warbles during the first nine months of 1937 had been 4·34 per cent. fewer than in the corresponding period of 1936. He added that while the decrease in the number of warbled hides had not been large, there was evidence that the average number of warbles per hide was smaller than last year.

Mr. R. Withinshaw, Chairman of the Central Committee, said that the Society would like to ask the Ministry to consider whether it would be possible to modify the dates of the dressings set out in the Order. Tanners had found a substantial number of warbled hides as early as February, and even January, and they would like to suggest that the date of the first dressing should be not later than February 1st, and that there should be in future five monthly dressings in all instead of four.

Alderman Billing, Past-President of the National Federation of Meat Traders, said that the Society had been much interested to learn that in some counties the local authorities, in sending instructions to the farmers with regard to the dressing of their cattle, had supplied them with four prepaid post-cards which they were asked to complete and return when they dressed their cattle. Those farmers who did not return the post-cards received a visit from the police to make sure that the cattle had been duly dressed. The Society felt that this was a most useful means of ensuring that the Order was complied with, and they would like to ask the Ministry to consider whether the system could be extended to other areas. A further point which they had in mind was that they felt that many cattle were not being dressed owing to the fact that the Order provided that cattle should be treated which were "visibly infested" with the maggot of the warble-fly. They suggested that, in order to remove any misunderstanding as to the precise significance of the term "infested," it might be advisable to omit these words and use instead the word "affected."

Mr. Lowden referred to the possible dangers involved in squeezing out the larvae instead of using the derris wash. If done at the right moment when the larvae were just matured the result was satisfactory, provided the grub was killed, but the squeezing of immature grubs and the consequent bursting of the sac which was still full of mucus frequently led to septic infection. The Society felt that it would be an advantage if the Ministry could confine the Order to the dressing without the alternative of squeezing out the warbles.

Mr. Vandepeer, a Principal Assistant Secretary of the Ministry, said that the Ministry welcomed the help of the Society, and felt that it was to be congratulated on the active propaganda work which it had undertaken. It was not to be expected that spectacular results would be achieved in the first few years, but the figures given by Mr. Newton were encouraging. It seemed clear that the main principles of the Order were sound, but that constant propaganda was required to ensure its efficient operation. He mentioned that the Ministry had themselves circulated 135,000 copies of their own leaflet through the chief constables in the different counties, while, in addition, they had used Press notices and a B.B.C. broadcast to supplement the efforts of the local authorities. The Ministry obtained a report from their individual inspectors on the working of the Order each year, and the general impression which they had gained from these reports was that the Order had been more widely observed this year than last. It was interesting to note that the number of prosecutions seemed to show that the authorities were acting more stringently in endeavouring to ensure the full observance of the Order. In 1936, according to his information, there had been eight prosecutions by three authorities for failure to dress cattle. In 1937 there had been 51 prosecutions by 13 authorities, fines being imposed ranging from 4s. to £8. He saw no reason why they should not include a recommendation on the lines suggested by Alderman Billing in the circular which they would be sending out early next year to the local authorities on the subject of the general working of the Order.

Mr. Cabot, Deputy Chief Veterinary Officer, said that he was satisfied that the local authorities had done their best to see that all farmers were aware of the responsibility put upon them by the Order. With regard to the dates of dressings, Mr. Cabot said that when the Order was first under consideration they had consulted expert opinion, and the views which they had received had confirmed their own opinion that four dressings would be sufficient. He was aware that a certain number of larvae might emerge before the first dressing was applied, but he did not think they need be unduly disturbed on that score. It was the main crop which was important, but the views of the Society had been noted and would receive the full consideration of the Ministry. He said they had been practically compelled to use the words "visibly infested" by reason of the fact that for the greater part of the year the animals carried the parasite inside their bodies, but gave no external evidence of the presence of the larvae. It was essential that if they imposed an obligation on the farmers they should define precisely when that obligation commenced.

On the subject of the squeezing out of warbles he mentioned that other countries, including Denmark and Germany, were very much in favour of this method. The Ministry had given careful consideration to the method which they should recommend and felt that they ought to give the option of squeezing out, particularly to farmers who were in the more remote parts of the country and where the incidence of warbles in a herd was low. He quite agreed that squeezing out was an alternative to be used in exceptional cases, and he also agreed that it might be helpful to recommend the application of a disinfectant when the squeezing out method was used. He thought, however, that this was a point which should be covered by propaganda rather than by a direct reference in the Order.

Mr. Cabot mentioned that the Order gave the local authorities power to grant exemptions in certain cases and the Ministry had anticipated that there would be quite a number of applications under this section of the Order. Actually, the number of exemptions granted had been negligible, and had been confined to only a few

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local authorities, a fact which he thought was of considerable importance.

In closing the discussion, Mr. Vandepeer said that he thought the discussion had been a most helpful one, and he hoped that it would be possible for them to meet together again at a future date. They all had the same objective in view, but he thought they should bear in mind that they must not put a greater burden on the farmers than was absolutely necessary.—*Meat Trades Journal.*

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NEW ANAESTHETIC AGENTS

We reproduce below the contribution made by the *Pharmaceutical Journal*, under the above heading, in a recent issue, to the valuable regular feature of its pages entitled, "Recent Advances in Therapeutics."

During the past 20 years many new drugs have been employed for producing a state of general surgical anaesthesia. These substances are introduced into the blood stream either by inhalation or by injection, and by their action on nerve cells of the brain produce a state of profound insensibility without harming the essential processes of respiration and circulation.

As inhalation anesthetics ether, chloroform, and a mixture of nitrous oxide with oxygen are still very widely used, but they all have certain disadvantages. Chloroform is considered by many anaesthetists to be fraught with too many potential dangers for routine use, and is employed only for operations on the upper air passages and in midwifery—although some anaesthetists of the older school would assign to it a much wider field. Ether may give rise to very unpleasant, if not dangerous, after-effects. It upsets metabolism, producing acidosis; it is an irritant to the respiratory organs, and may give rise to broncho-pneumonia, and if it is administered for a long time it may cause damage to the liver and kidneys. It is now not used so much as the sole anaesthetic as to supplement the effect of nitrous oxide and oxygen.

Cyclopropane

It is scarcely to be wondered that almost since the anaesthetic properties of ether were first demonstrated—about 90 years ago—a continuous search has been made for some more satisfactory method of producing anaesthesia with less risk to the patient. Ethyl chloride, ethylene, tribromethyl alcohol, numerous barbituric acid compounds, and a host of other substances have all been used, but in each instance their routine employment is limited by certain drawbacks. In 1928 two Canadian pharmacologists commenced experiments with cyclopropane on cats and rabbits. Their preliminary tests indicated that the use of this substance as a general anaesthetic did not produce the metabolic disturbances associated with other methods of producing anaesthesia. The cyclopropane which they used was somewhat impure, but in 1930 clinical investigation with pure cyclopropane on human patients was begun. Since that time a large number of clinical and pharmacological investigations have been made, and these have confirmed the first favourable impressions.

Cyclopropane, C_3H_6, is a saturated cyclic hydrocarbon having a specific gravity of 1·46. It may be liquefied at a pressure of 75 lb. per square inch. One ounce is equivalent to approximately four-and-a-quarter gallons (16 litres) of gas at atmospheric pressure. It will produce narcosis when inhaled in a concentration as low as 4 per cent. The average concentration used for deep surgical anaesthesia is 10 to 15 per cent., and in such concentrations it is possible to maintain an ample supply of oxygen to the patient. This fact makes for safety by preventing tissue anoxaemia, a very real danger with some other anaesthetics.

Cyclopropane is used in a closed circuit apparatus in which carbon dioxide is absorbed and the patient re-breathes the anaesthetic, so that hardly any of the gas escapes into the operating room. This almost eliminates the possibility of the formation of an explosive mixture with the anaesthetic gas and air. About one-and-a-half gallons of cyclopropane are required for one hour of anaesthesia. It is suitable for all kinds of operations and for all types of patients, from very young babies to the aged.

Anaesthesia is induced in from three to four minutes and its superiority over other general anaesthetics is said to be the smoother post-operative course of the patient and the comparative freedom from complications. These views are advanced by H. R. Griffith in the *Canadian Medical Association Journal*, May, 1937, who has used the gas for more than 2,500 patients. In operative obstetrics, including caesarean sections, cyclopropane anaesthesia is reported to be remarkably free from post-partum bleeding and abdominal distension.

Pentothal Sodium

Several derivatives of barbituric acid have been used extensively as general anaesthetics. For this purpose they are usually employed in the form of the sodium salt, a solution of which in water is injected intravenously. The barbituric acid derivatives used in this way include evipan sodium, nembutal, sodium amytal and pernocton. An account of this method of inducing anaesthesia was given in *The Journal*, January 16th, 1937, pp. 53-55. Recently many anaesthetists have expressed a preference for a derivative of thiobarbituric acid, pentothal sodium, or the sodium salt of ethyl (1-methylbutyl) thiobarbituric acid, a compound that is closely related to nembutal, differing from it in the addition of sulphur to the molecule.

Pentothal sodium is a yellow, crystalline powder freely soluble in water, producing a lemon-yellow coloured solution with emission of some gas. For intravenous use the solution must be freshly prepared, and must be quite free from any undissolved particles. The substance is supplied in ampoules containing 1 gm., from which a 10 per cent. solution is prepared by the addition of distilled water. The dose of the solution ranges from 2 mils to 10 mils according to the duration of the operation, and sometimes a total of more than 10 mils may be necessary. The injection is made slowly—some anaesthetists give 1 mil every 20 seconds, others give 3 mils every 15 seconds. After the first 3 mils has been given a pause should be made because the patient's breathing becomes shallow, but soon returns to normal. For small operations lasting not more than 20 minutes a dose of 3 mils may suffice, but for longer operations further injections are required. Sometimes it may be necessary to prolong the anaesthesia with ether or nitrous oxide gas.

Anaesthesia is very rapidly induced by injection of pentothal sodium—as indeed it is with other barbiturates given in this manner. The patient usually becomes unconscious in about ten seconds, and recovery is rapid. The chief limitation to its use is the duration of the opera-

tion—the desirable limit seems to be about 30 minutes. In obstetrics pentothal sodium is employed to produce anaesthesia during labour 10 per cent. solution, the average dose used for in doses ranging from 3 mils to 10 mils of the this purpose being 7 mils.

Decicain

The number of new substances introduced as alternatives to cocaine for the production of local analgesia, or loss of sensation in an area caused by the drug acting directly on nervous tissue to which it has been applied, is even greater than the number of new general anaesthetics. Most of the cocaine substitutes are less toxic than cocaine itself, but the majority of them have one great drawback in that they are not absorbed to any appreciable extent through mucous membrane or skin, and hence do not produce any very great analgesia by surface application.

A compound which is claimed to have the property of producing surface anaesthesia when applied to mucous membrane is decicain—known in America and formerly in this country as pantocain hydrochloride, $C_4H_9NH.C_6H_4CO.O.C_2H_4N(CH_3)_2HCl$. The base, pantocain, is *p*-butylaminobenzoyl-dimethylaminoethanol, and belongs to the procaine type of compound. It differs from procaine in that a butyl group replaces a hydrogen atom of the aminobenzoate group and two methyl groups replace the ethyl groups of procaine.

Decicain is a white crystalline stable compound easily soluble in water and in alcohol. The aqueous solution is neutral to litmus; a 1 per cent. solution in physiological saline has a *p*H of 6·7 and a 0·1 per cent. solution in saline has a *p*H of 7. Aqueous solutions are not decomposed by boiling. For application to the eye a 0·5 per cent. solution is used, whereas for application to the nose and throat 2 per cent. solutions are needed. For infiltration it may be used as weak as 0·1 per cent. A 0·5 or 1 per cent. solution is injected for spinal anaesthesia in doses of 1 to 2 mils. A special viscous solution, decicain L, is supplied by the manufacturers for this purpose.

A solution of tribromethyl alcohol in tertiary amyl alcohol has been accepted for inclusion in "New and Non-Official Remedies." Each mil of the solution contains 1 gm. of tribromethyl alcohol and 0·5 gm. of amylene hydrate. Avertin with amylene hydrate is administered rectally in 2·5 per cent. solution in warm distilled water at a temperature not exceeding 40° C. A small quantity of the solution should be tested with the congo red indicator just before administration; the colour of the solution should match that of an equal amount of distilled water containing an equal quantity of the congo red indicator. If the colours do not match, this indicates the presence of irritant hydrobromic acid and dibromacetaldehyde, and the solution should be discarded. The maximum dose for basal anaesthesia is 80 mgm. of avertin (40 mgm. of amylene hydrate) per kilogram of body weight. In young, vigorous persons the dose may sometimes be increased to 90 or 100 mgm. of avertin (from 45 to 50 mgm. of amylene hydrate). The total amount administered should not exceed from 6 to 8 mils of avertin with amylene hydrate for women or from 9 to 10 mils for men, regardless of weight.

Local anaesthetics for subcutaneous injection are frequently used in solutions containing a small quantity of adrenaline to restrict diffusion by its vaso-constricting action. A new vaso-constrictor for use in this way is cobefrin, *o*-dioxyphenylpropanolamine. This compound produces a colourless and almost neutral solution in water, and although it is more stable than adrenaline it is decomposed by alkalis, by prolonged boiling, or exposure to strong light. Like adrenaline it constricts the smaller blood vessels, but this action is not followed by dilatation and fall in blood-pressure as may occur with adrenaline. Cobefrin is used in a concentration ten times greater than that customary with adrenaline—that is to say, in the preparation of a local anaesthetic solution as many minims of a 1 per cent. solution of cobefrin are used as are commonly employed of a 1-1000 solution of adrenaline hydrochloride. A dose of 15 mgm., however, should not be exceeded.

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GRASS DRYING IN 1937

"It was evident from the attendance and discussion at the second annual general meeting of the Grass Dryers' Association—held in November, at the Holborn Restaurant, London—that both farmer and manufacturing members now regard grass drying as a strictly business proposition," says the *North British Agriculturist*. "A great stimulus had been given to the industry by the Government decision to encourage grass drying and the membership of the Association has risen during the past year from 68 to 98. There were eight grass drying plants in Great Britain in 1935. In 1936 the number rose to 50, and to-day there are nearly 100. The Association, an independent body of dried-grass producers, was formed two years ago to promote the general welfare of the new industry and the Council hope, by standardising grades of dried grass, to safeguard the interests of its members and, at the same time, provide purchasers with some assurance of quality.

"In presenting the annual report, the Chairman, Colonel Vaughan Williams, who farms in Derbyshire, mentioned the work which the Ministry of Agriculture proposed to carry out during the next few years in connection with the feeding of dried grass, and announced that the Association had expressed its willingness to co-operate and place at the disposal of the Ministry any information likely to be of assistance. It had stressed the fact that high grade dried grass should be used in nutrition trials since the case for dried grass depended largely on the extent to which it could replace concentrates in the cattle ration.

"With regard to the analysis of dried grass samples, Colonel Vaughan Williams gave it as his opinion that members could render valuable assistance to the Association by supplying with their samples, figures relating to the total weight of grass dried, the length of the drying season and the cost of production. During the year under review 430 samples were submitted to the Association's analyst. Of these 370 had been analysed for protein and 160 for carotene, the average for protein being over 14 per cent. There were wide variations; for example, in May the protein ranged from 12 per cent. to 23·9 per cent., and in October from 11·2 per cent. to 20·6 per cent.

"Colonel Vaughan Williams announced that the Association proposed to publish a very valuable handbook on the subject of feeding dried grass. This book, "The Feeding of Artificially Dried Grass," by Dr. S. J. Watson, would be issued shortly, and would fill a very real need for a reliable manual on the subject of nutrition."

Correspondence

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The views expressed in letters addressed to the Editor represent the personal view of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

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THE CENTRALISED SERVICE—GROWING CONCERN

To the Editor of the Veterinary Record

Sir,—The tone of your editorial is disquieting and it is imperative that your suggestion should be acted upon at once and the full facts placed before the veterinary profession.

Those of us who rely upon agriculture for our income are anxious to know if we are to be excluded from the scheme on the grounds of age, and the lack of post-graduate diplomas (which were instituted with a laudable purpose, but signify nothing for practical experience outside a laboratory), and that all our activities in cattle practice are to be limited to attendance at parturition, and removal of retained placentae; and that we are to look to other fields in small-animal practice (poultry, hares, rabbits, cage birds, ferrets, and later perhaps moles), for our income—as, if so, it is time to get out whilst the going is good.

The Government must be more optimistic over the practical attainments of its candidates, if it considers that one year's experience in practice is sufficient to qualify, than those of us in general practice with a knowledge of the attainments of the average candidate seeking a post as an assistant.

I cannot believe that the Government is going to be so stupid as to confer "the order of the boot" on experienced practitioners who are more than anxious to help to the uttermost in this scheme.

I do believe, however, that the "National" has paid far more attention, at the dictation of a few, to another matter which is common knowledge to all and has, in short, been barking up the wrong tree and neglected the major issue.

Yours faithfully,

J. F. D. Tutt, F.R.C.V.S.

Winchester.

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MEAT INSPECTION AND THE VETERINARY PROFESSION

To the Editor of the Veterinary Record

Sir,—Please permit me to thank the Past-President of the N.V.M.A. for reminding me that meat inspection was mentioned during the proceedings of the Bournemouth Congress. My reference was to the Presidential Address because I attach little value to post-prandial orations: I think my lack of appreciation of such efforts, particularly on the part of politicians, has been amply justified by the course of events between the N.V.M.A. and the Ministry of Agriculture and Fisheries during the last few months, and at the moment I feel still more convinced that in a very few years it will be realised that, acting under the stimulus of the Society of Veterinary Practitioners, the N.V.M.A. has thrown away all hope of progress for the profession. I will venture a prophecy that the result of the provisions of the Agriculture Act in relation to the veterinary profession will be (*a*) the abandonment of all claim to public health work; (*b*) the ruin of municipal veterinary service; (*c*) the county veterinary service will find itself under very unfavourable service conditions; and (*d*) the complete disappointment of the general practitioners who will find that they have no place whatever in the public veterinary service.

Yours faithfully,

J. A. Dixon.

Public Health Department,
12, Market Buildings,
Vicar Lane,
Leeds, 1.

December 16th, 1937.

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TUBERCULOSIS OF THE UDDER

To the Editor of the Veterinary Record

Sir,—As there seems to be a divergence of opinion regarding the significance of enlargement of the supramammary glands in tuberculosis of the udder, it may be interesting to state what Robert von Ostertag writes in his classical work on "Fleichbeschau." Here it is—"Both in nodular and diffuse tuberculosis of the udder a specific change in the supramammary lymph glands occurs. Through the regular characteristic involvement of the supramammary lymph glands udder tuberculosis may be distinguished from all other apparently similar looking conditions of the udder."

Yours truly,

G. Mayall.

Bolton.

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COLIC IN THE HORSE AND ITS TREATMENT

To the Editor of the Veterinary Record

Sir,—The abstract of the article on "Colic in the Horse," by Gratzl of Vienna, so ably given by your contributor E. G. W. in the *Record* of October 16th, constitutes a step forward in the literature and the knowledge of this disease. As British veterinarians we must deplore the fact, stressed in the abstract, that "among the 48 references provided there is not a single one to any work published in English." But we have, I affirm, largely ourselves to blame. None of the accounts of colic and its treatment that I have read in any English text-book accords with my own not inconsiderable experience of this universal equine disease, whereas the conclusions of Gratzl, on the whole, do.

Nor are our journals free from blame, for I have more than once tried in vain to find a British veterinary periodical willing to publish criticisms of British orthodox colic treatment less bluntly implied than those of Gratzl. About two years ago I sent from Australia to an English veterinary journal a detailed account of what appeared to be the murder of a valuable and noted Australian sprinter at Adelaide by orthodox

veterinary treatment. I enclosed news-cuttings which stated exactly the treatment the horse received and gave a scientific account of the *post-mortem* examination.

With that misfortune as my text, I developed my views of the rational treatment of equine colic which were like those of Gratzl, namely, avoidance of drastic intestinal stimulants and reliance, mainly, on saline hydrotherapy and atropine (with morphine). It was in effect the revision of an article that I had contributed about ten years before to an English veterinary journal entitled "The Rational Treatment of Intestinal Pain in the Horse." But I heard no more of my Australian article, which the editor, apparently, did not think worth sending back or even acknowledging. This incident, in fact, was fairly typical of an era in British veterinary journalism which—one rejoices to observe—is passing away.

The era to which I refer lasted for many years and it was characterised by an obvious contempt for the contributions of the clinician as compared with a reverence for those of the academician, official, or bacteriologist. This occurred, naturally enough, in reaction to the over-empirical days of Hunting when such phrases as "sheet-anchor" appeared on every page. Indeed the records of pre-War veterinary therapeutic discussions seem more religious than scientific, less akin to logic than confessions of faith or declamations of the Oxford Group.

But the reaction went too far, and among the rejected clinical contributions of the last 15 years there is perhaps some criticism of orthodox work that might have been used by such Continental workers as Gratzl. Or if not among the rejected contributions themselves, among the contributions that might have been submitted if there had been any hope of their acceptance or no fear of their humiliating rejection.

But I speak of the past because it is very evident that a most excellent change has come over our premier journal—the premier veterinary journal of the world, the *Veterinary Record*, during the past year: a change that reflects, no doubt, the better general intelligence of ourselves and the higher standard of our education. There is, I think, no fear at all at the present time that the *Veterinary Record* would reject a contribution from a clinician, however critical of orthodoxy it might be, provided the contributor observed the customary decencies and evidently knew what he was talking about.

But it certainly is a great pity that Gratzl could not have found in all British veterinary literature one little reference, if only to the excellent work of our W. W. Lang who has, at least, popularised the use of the stomach tube and gastric hydrotherapy in equine practice.

Yours faithfully,

WAKEFIELD RAINEY.

c/o Union Bank of Australia,
Perth,
Western Australia.
November 21st, 1937.

ADVERTISERS' ANNOUNCEMENT.

INTERESTING TRADE DEVELOPMENT.

Bayer Products Ltd., now possess their own private aeroplane for the distribution of medicines to their various depots in Europe and elsewhere. This is probably the first instance of a commercial firm employing its own air service for the distribution of its goods, and the arrival of their triple-engined aeroplane D-AOHU at Croydon on December 14th, thus marked an interesting development in the importing of medicinal pharmaceutical remedies from the Continent to England.

On this maiden flight to London the machine brought over supplies of Bayer Aspirin and other pharmaceutical products, including their most recent discovery "Prontosil," the drug which marks a new epoch in the treatment of streptococcal infections.

The aeroplane, which has accommodation for passengers, has ample room for drug supplies, and as the journey from Cologne to London can be done in approximately two hours, there is a considerable saving of time in goods reaching London. This rapid method of transport is a forward step in modern business development and there is no doubt that, in time to come, it will largely supersede the slower rail and steamship services.

Diseases of Animals Acts

SUMMARY OF RETURNS

Period.	Anthrax.		Foot-and-Mouth Disease.		Parasitic§ Mange.		Sheep Scab.	Swine Fever.	
	Outbreaks confirmed.	Animals attacked.	Outbreaks confirmed.	Animals slaughtered as diseased or exposed to infection.	Outbreaks reported by the Local Authorities.	Animals attacked.	Outbreaks confirmed.	Outbreaks confirmed.	Swine slaughtered.
	No.	No.	No.	No.	No.	No.	No.	No.	No.
Period 16th to 30th Nov., 1937	47	54	24	4,721	1	1	11	30	19
Corresponding period in									
1936	17	24	15	917	2	2	17	73	34
1935	18	18	2	163	1	1	43	86	76
1934	22	24	9	1,405	3	5	45	103	42
Total 1st January to 30th November, 1937	655	788	100	18,300	106	144	217	940	554
Corresponding period in									
1936	405	481	38	3,645	101	243	205	1,756	1,206
1935	338	391	50	11,787	92	211	382	1,862	1,139
1934	355	401	61	7,653	109	181	587	1,631	916

NOTE.—The figures for the current year are approximate only.

§ Excluding outbreaks in Army Horses.